DOMESTIC ENGINEERING

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Suggestion:
Cut out; frame neatly; put in show window; change weekly.

ANY HOUSE ANYWHERE

can now have light, plumbing, sewage disposal and steam or hot water heating. The American inventor has made it unnecessary that a house furnished with these luxurious necessities shall be built in a town with gas works, water works and a sewer system. But plumbing, lighting and heating plants in detached country homes should be just as good as in city buildings. If of poor material and indifferent workmanship they contain the same elements of danger and discomfort. Wherever this kind of work is done it should only contain the best quality of material bearing the maker's name and guarantee, and should be put in only by men of knowledge, experience and judgment.

The Trade's Harvest Time

Nature, with her generous recurrent prodigality is preparing to pour billions of dollars of material wealth into the outstretched palms of the people of this much favored country. The wonderful marvel of the creation of new wealth in the form of agricultural produce without in any degree lessening the ability to do it next year, and yearly thereafter, is again passing before us. Because of conditions good prices will be realized for the produce of the soil. The farmer is now getting his share of good fortune. Financial writers tell us that the farmer instead of being a borrower is becoming an investor; that, having paid off his mortgages, improved his buildings, bought talking machines and pianos, he is now buying automobiles.

The farmer is now a prospective purchaser of plumbing, lighting and heating. And—as it happens nearly always—when the means is present to satisfy a demand, the ways of supplying the need are also at hand. We see for example, when our well-to-do farming class feel the desirability of plumbing, lighting and heating, the ever-ready American inventor has made it possible for him to have them as easily as may the dweller in towns. Domestic water supply systems may be had which carry water under pressure to house, stable, lawn and garden; septic sewage disposal systems care for wastes without odors and with perfect safety. Bath, kitchen and laundry may now be furnished the detached residence quite as readily as to the city house. Steam or hot water systems may be sold the farmer as readily as to his city brother; acetylene lighting plants are cheap, safe and efficient. Thus the desire and the means of gratifying it are ready for that prince of good fellows,—

The plumber, steam and hot water fitter to bring them together. Those readers of "Domestic Engineering" who have prepared to meet this demand and have specialized on this country work, are reaping rich rewards. But the field has been lightly touched. The farmers need to be shown how easily and reasonably plumbing, lighting, and heating may be put in their houses. While the government has done something to educate them to these possibilities, still the real sales must be made by the plumber himself. I cordially recommend him to write to those enterprising firms who are advertising water supply and sewage disposal and lighting systems and prepare to go for the country trade intelligently and actively.

This is, by the way, a very fortunate business, in which the plumber, steam and hot water fitter is engaged in. Some businesses have to create the demand for their products, like the talking machine, for which there exists no actual, imperative need. But people must dispose of their wastes; they must have water supply; they must have heat and light. Therefore the market for the plumber's labor and his wares is already made for him. All he need do is to show how much better a disposition of wastes he can install; how much more conveniently he can provide a water supply; how much more satisfactorily he can erect a heating plant; **and the trick is turned.**

Jno. K. Allen.

The Mountain Residence, at Arden, N. Y., of Mr. E. H. Harriman

"Who has created a railroad empire larger than any other the world has ever seen"*

By Lucy Cleveland.

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Fairy stories are but the parable of man's Possible. Fairy stories were but the prismatic avenues (fairly well-paved with spike-set stones) which led toward an enormous Sparkle—that may be made reality. We say, "may." For a genius is but the battling human embodiment of the fable,—in which to men and women appeared the genii—the varied monitions of the greater self—and said, with the remorseless voice of the clock's ticking, "You mighty marcher, such—and such—is the road to the peak: hours of frightful crises, of terrible watchings and their fierce nutriment, of nerve-breaking tension, of terrific rending decisions—but all pregnant with glowing results!"

As we stood on the summit, at Arden, the mountain home of Mr. E. H. Harriman who holds in his fist the "lines" on which this country depends for a large portion of its life—seventy thousand miles of railroad and who says that he has not yet attained; as we gazed at one of the finest culminations of life-work,—the bloom of architecture which the genius of great artists seems but to have released, a soul, from within the forest mountain-lands, and which is the human note of the world-long symphony of silent hills; as we studied the mastership in engineering, the scientific sinews of a great estate, and which celebrated civil and electrical engineers have installed in the house, it all brought quickly to our remembrance just one line:

"The heights by great men won, and kept,
Were not attained by sudden flight,
But they, while their companions slept,
Were toiling upward in the night."

The mountain residence of Mr. E. H. Harriman stands thirteen hundred feet above tide water. Mr. Harriman has harnessed a mountain. "One" mountain? It is a plural plentitude of beauty. Mr. Harriman collects peaks as other men pottery. Stand, at Arden, and sweep your gaze around the billows piling up in a grand array of green. It is all the mountain estate. The estate is forty thousand acres. The view is one of those great vistas that one hoards and heaps and keeps forever. You are nearer the moon in your hunger for it on the crust of this earth. There is not a hint of human habitation in sight around all the amphitheatre of mountains; there is not a breath save from the breast of forests; there is not a sound from the twilight of green crags. But you hear the heart of Solitude beat! Afar, is the range of the Shawangunk Mountains, and the Ramapo Mountains, and Dunderburg Mountain. To the northwest, the Hudson Highlands and the Catskill range. Far, far below glisten the lakes* that give "the countless dimpling of the deep" of the Greek poet** to the prodigal landscape. And what when the purple light fills the enormous wine-cup of the hills, and when the constellations are the ceiling of the Courts? The site was chosen for its beauty. Yes, but chosen, primarily, for its grip upon the prize which the gods (after some intricate and delicate debate interrupted by the voice of Juno too intent upon her mirror) decided to set first in the roaring trade of human endeavor: *Health.* What pure winds of heaven on these Arden heights. What sunlight; and what air! "'What's the sweetest smell on airth, Hosee?' says Mr. Wilbur to me onct, sez he. 'Noomone hay,' sez I pooty bresk. 'Nawthin' of the kind,' sez he. 'My leetle Huldy's breath,' sez I ag'in. 'You're a good lad,' sez he, his eyes ripplin' like, for he had lost a babe, 'but t'aint that nuther,' sez he. 'Ef you want to know,' sez he, 'what's the sweetest smell on airth, open your winder of a morning, and you'll larn that the best of perfooms is jest *fresh air*!' sez he."† Fresh air, indeed, in this "forest of Ardennes." For many days

*The Harriman roads and their mileage is as follows: Union Pacific, 5,916 miles; Southern Pacific, 9,731; Illinois Central, 4,378; New York Central, 12,282; Atchison, 9,350; St. Paul 8,687; Northwestern, 7,623; Baltimore & Ohio, 4,462; Delaware & Hudson, 845; Georgia Central, 1,914; Erie, 2,571. Mr. Harriman's flag also flies in the Southern Pacific, on the mail steamships of the Southern Pacific Service to the Orient. A new line of steamships, running from Savannah to New York, is also in the near future. This line of boats will connect with the Georgia Central Road, and be available for shipping cotton, etc. Mr. Harriman has lately become a Director in the New York Central Roads.

* Mr. Harriman owns Cranberry Lake and Forest Lake. On Forest Lake he has a camp, with gamekeeper.

** Aeschylus .

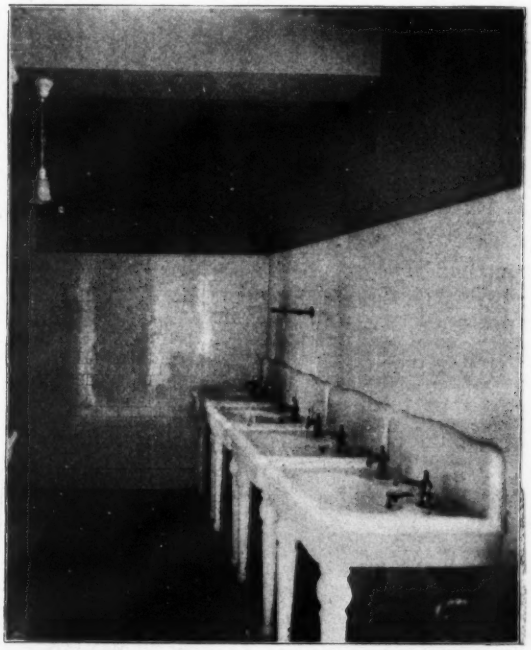
† The Bigelow papers.

and weeks, Mr. Harriman walked over these mountains, selecting the point where to plant the house. He found it. He first ran up an observatory (it sounds like Aladdin Abushamat and his sky-chariot), to see what spectacle of nature his house would command from its tower. He didn't like the course of the brook in the Ramapo Valley—and he turned it. It is, moreover, interesting to learn further practical, shrewd facts—that Mr. Harriman sold 30,000 cords of wood from this mountain forest alone, whose slopes had to be cleared to excavate; and that not one bit of the stone goes to waste (after blasting). The stone that is not used, goes down the car-track to make a macadam road in the valley. The entire property was drained. There is not a mosquito nor a mosquito-breeding swamp on the thousands and thousands of acres. Excavation for the house began in 1905. The single rock, on the summit of the mountain, on which the house is built, and from which it is built, stood sixty feet high. Blasting took place literally at every step of the way.

Location of the Harriman Works.

In the valley, directly at the foot of the mountain, Mr. Harriman built his own "Works," where all the stone-cutting is done, and the stone-carving and the wood-carving for the house. Many of the laborers have grown up with this house, and have here been educated to their work. All the building material, including all the soil (earth)—for there were only three feet of earth on the rock at the summit—is transported to the summit by an inclined railway (cable road) built by Mr. Harriman up the face of the mountain. This cable road is three-quarters of a mile long. When the house is completed, a motor car especially designed and elegantly equipped will run up this track, at whose entrance will be an ornate stone entrance and lodge. From Mr. Harriman's private car on the Erie road, his guests may step into this car of the inclined railway, and be conveyed directly into the Arrival Court of the great residence. The Works employ 450 men. It will be seen that all the work *is done on American soil.* It is an American house; it is American labor, as far as is possible to be obtained. There are no importations from Europe of costly marble decorations or of wood-panels—walnut, cherry or chestnut—for ceiling, or dado, or frieze in the rooms and halls of the residence. All the chestnut (for trimmings) was cut on the property. Even the lumber is brought to the dry room at the works, and dried here. The many rooms at the Works comprise two storeys. In the basement are two automatic engines that run the joining and planing machines upstairs. There is one dynamo in the basement, which at present furnishes power to the house. The writer visited each room where the stone-cutting and hand-carving is done from the models made in New York City.

As we go up the incline cable railway, the view enlarges in steadily increasing majesty—a mountain world. Arrived at the summit, we glimpse through the trees the great artesian well which is 1100 feet deep through the solid rock. The bottom of the well is in the Jersey sandstone. From a pumping-station at this well, the water is carried to a huge reservoir built by Mr. Harriman on an adjacent mountain (all in the estate), 4,000 ft. from the house. The water returns through a 6-inch main for the house supply. The reservoir, with safety cover, is 75 ft. in diameter, and 12 ft. deep.

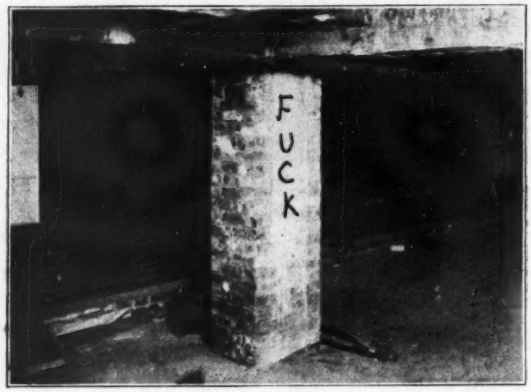


The lavatories in the maid's toilet room on the second floor of the mountain residence of Mr. Harriman.

The Approach to the Residence.

It has been said by one of the great thinkers of the world that external beauty must begin at the most external point. The driveway—which is 1,000 ft. long, a macademized road with footpath on either side, and planted with grass and trees, and at whose entrance is a stone-lodge, and lodge-keeper, strikes at once the noble note of approach

to a notable house. Along this great sweep of driveway we have the appetite whetted on a constantly increasing scale for the pageant of beauty. The coup d'oeil burst upon us—the Arrival Court with its observation terrace of the double stairways of stone; the HOUSE; and beyond the house the lily fountain court beyond which is seen the enormous terraces and Pergola Court of the great Pool. The view of these terraces as one turns the corner of the house, is overpowering. What a residence! It is designed by the celebrated architects, Messrs. Carrère & Hastings, of New York, so noted for their monumental work. The harmony in this wonderful residential architecture, steals upon you like a fragrance. "Harmony," said Beethoven, "is the secret in all great Art." And it would seem that he knew! In all this stone amplitude not one false note has been struck. The courts and terraces show what advantage has been taken of a mountain-top opportunity. The house is Modern Renaissance, based on the Eighteenth Century. But really a new note in architecture has been heard, an intellectual feat which will be historic. As in the old castles of the Tyrol, the building was the outgrowth not only of the need but of



A portion of the cellar, showing turn in pipe line and also indirect stacks in the background of Mr. Harriman's residence at Arden, N. Y.

the location. The house arose from the rock, expresses the rock, is the rock. The terraces are the slopes that arise upon our dreams.

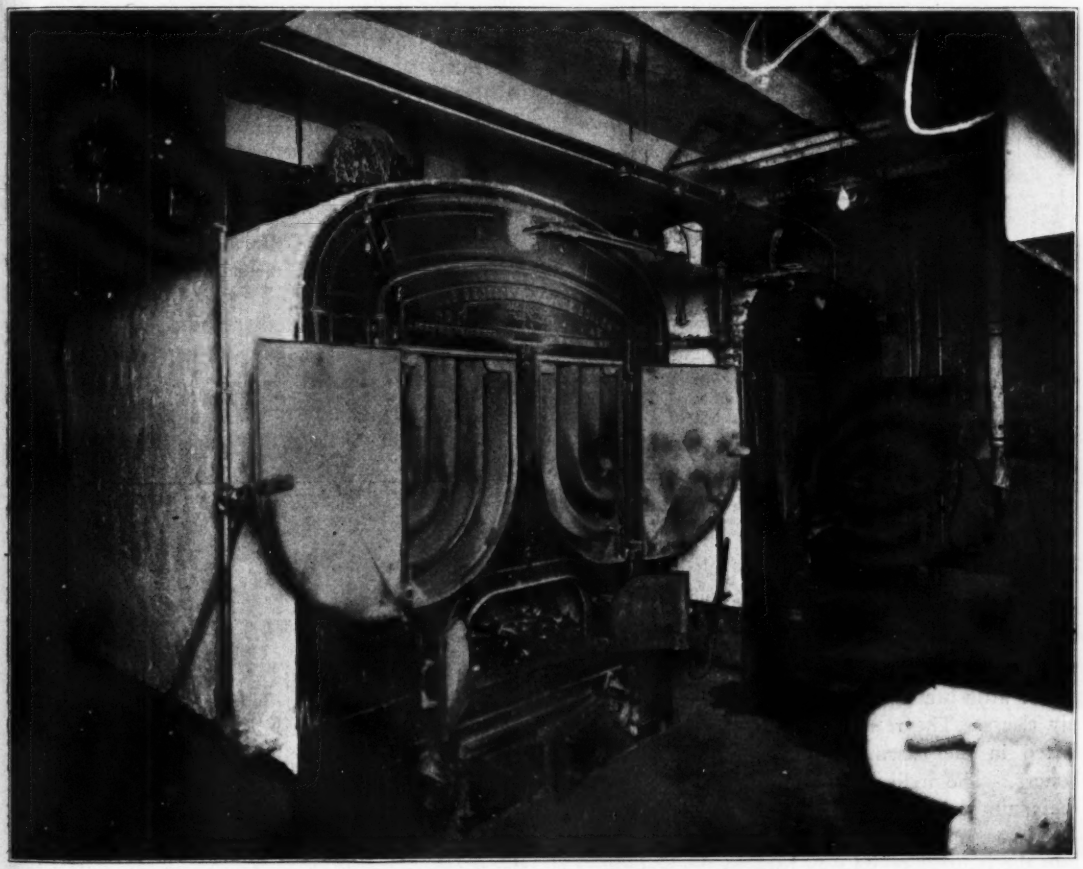
The Residence Itself.

The residence is built entirely out of the stone of the mountain,—a unique idea. In the diamond-shaped adornments of igneous rock set in the walls of the house, is seen the result of old volcanic action in the Paleozoic Age when the Jura arose to being, when all this family of mountains around us at Arden were born into the azure by some throe in the bosom of Nature. The house and its Courts and Terraces is probably the noblest residential domain in the world owned by a man who has not prince-long titles to his name, but who counts as his best inheritance the blue blood that helped to make his country's flag. Over the entrance door of the house is the family escutcheon. It is carved out of one block of this mountain stone; and it weighs nine tons. Of the splendor of the interior plan? The great entrance hall of Utah stone has a trussed ceiling and oak wainscot. At its huge fireplace, Jack could have sat with a cup of content after he had finished his work on that hard Giant job. Architecturally, this Entrance Hall recalls the Hall at Hatfield House (seat of the Cecils). The "hall" is a feature handed on from times beyond the dim Gothic, for in the "hall" at Ithaca, Odysseus slew the suitors; and in the "hall" at Tiryns, kings dispensed judgment that laid the foundation of Greece's immortality. In a gallery directly over the entrance of the Arden Hall (the "gallery" of the king's minstrels from Erin to Arden), there is a grand organ. The echo organ is placed in the adjoining loggia of the interior Court. When the floods of music fill this hall at twilight and at moondawn? The interior Court has a fountain and loggia. Technically, the "loggia" is a roofed corridor or gallery, forming a protected sitting-place out-of-doors. It is a feature of the Italian palazzi. This interior Court will be walled in with glass in winter. Beyond the reception room of the bow-window is the dining-room with its loggia; and other stately loggia that form a sun-room enclosed with glass, so that one will seem to sit out of doors, in December. These rooms, and the living room, whose tapestries are by Mr. Albert Herter, open on the lily Fountain Court above described. The vista through the great entrance hall across the enormous loggia to the terraces and pergola of the rose-vines, is startling in its brilliance.

On the second floor are the library, and Mr. and Mrs. Harriman's suites with their boudoir and bathrooms (the bathrooms as large as the drawing-room of a town residence); and the many family bedroom suites with their bathrooms; and the many guest chamber suites with their bathrooms; and the breakfast room; and in a compact corner of this second story, Mr. Harriman's office, and the Secretary's office, bedroom and bathroom. There are 69 rooms in the residence, 13 halls, and 30 bathrooms. Every room has hard wood floor of the rounded corners. Everywhere, in every room,

large open fireplaces. The windows are as generous as Lord "Dick" Whittington's in his Guildhall; and we doubt not that at these big fireplaces a place will be made for the dear Magic Cat.

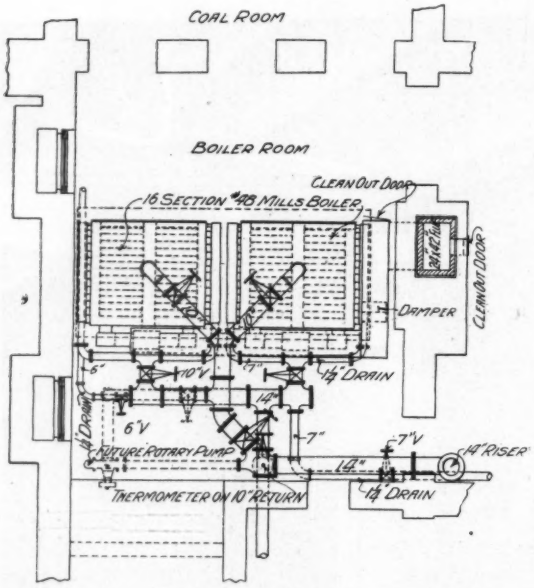
The servants' quarters and the working quarters of the house we find distributed between the first and second storeys. Back of the dining-room are the many pantries that open into the kitchen and the servants' hall and the kitchen pantry. The grouping of the cold storage rooms near the kitchen is admirable, and a better plan than in the Senator Clark house where these were distributed through the basement. The laundry, with its large drying-room, and its dryer-room adjoins the kitchen. In a wing beyond the servants' hall, are some of the men servants' rooms, and their lavatory. This lavatory includes a bathroom set in an alcove in the lavatory itself. For it is all on such large, generous scale. On the second floor this plan is followed out for the maids' quarters, and their lavatory. The third floor has further guest rooms, and the housekeeper's suite and bathroom, and valet's room, and large store rooms, and cedar closets and trunk rooms. We seem to have been wearing the Cap of Fortunatus, and to have been walking through the Sultan's palace. But we are coming to quarters that happy Cyprus never knew, and at which Cyprus would have taken to its heels —for fear of American fire in two gigantic boiler rooms. For we have reached the basement of the house, and we are standing gazing at the engineering department. It is one of the largest and most elaborate in any private residence in the world. The plant is three-fold. The heating, ventilating and electricity in the Harriman house at Arden are by Messrs. Hollis French & Allen Hubbard, the celebrated Consulting Engineers, of Boston, Mass.



The Boiler Room proper in which may be seen the two sixteen section No. 48 Mills boilers which furnish the heat for the hot water heating system installed in the Mountain Residence of E. H. Harriman.

The Heating.*

The heating is accomplished by means of the direct and indirect hot water system. The boilers are situated about in the central portion of the basement. There are 2 boilers, each consisting of 16 sections, No. 48 Mills.** The supply from these boilers is carried directly to the attic through a fourteen inch feed riser, and from a central point



Boiler Room in Mr. Harriman's mountain residence, showing "hook up" of boilers, location of valves, sizes of main, flues and drains.

in the attic branch mains connect with all the supply risers. The returns from these risers are collected in the basement and brought back to the boilers. The indirect radiators are shunted in on the main riser system, so that the heating water after passing through the direct radiators passes into the indirect on its way back to the boilers.

*The method used for determining the size of the various radiators in the system is the one commonly used, namely, that of calculating the amount of glass exposure, cubic contents of the rooms and allowing the proper number of heat units lost per foot of exposure, and leakage from the room, to get the total heat unit demand, and then by allowing a sufficient number of feet of radiation to give off sufficient heat to meet the demand. The calculations are based upon information given in tables accessible to all, and have been used with judgment based on past experience.—Editor's Note.

*These boilers are rated for a total gross capacity of 28,100 feet of radiation and it will be seen that they are plenty large for the duty when we learn that total amount of radiation in the residence amounts to 15,373 feet of heating surface, divided as follows: direct radiation, 6,413 feet; indirect radiation, 8,960 feet.—Editor's Note.

With the overhead down feed system of hot water heating above described, all air valve-vents on the radiators have been eliminated,* which reduces in a great measure the attention which ordinarily must be given to direct radiators.

The Ventilating.

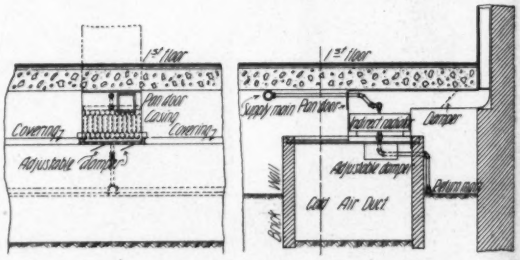
The entire first floor and a large portion of the second floor, with the exception of the servants' quarters, is heated by means of indirect radiators located in the basement. These take the fresh air from the main inlets, and send it through the warm air ducts in the partitions to the various rooms. All heat registers are located on the side walls just above the baseboard. There are no fans in the attic nor in the basement. The ventilation for all main rooms is greatly assisted by means of the numerous fireplaces in each room.

Temperature Control.

Here is used the Johnson Service, all the principal rooms being equipped with the Johnson Service Co.'s system of automatic temperature control, which maintains the temperature at a constant fixed point as desired.

The Electricity (Lighting).

There is very little in this house that differs from the ordinary electric lighting system. In general, the lighting is by bracket or ceiling fixtures, the designs being by Carrère & Hastings. In the reception room, in addition to the brackets on the walls, there will be concealed lights above the cornice, lighting the room indirectly. Provision has been made to supply current to the two foun-



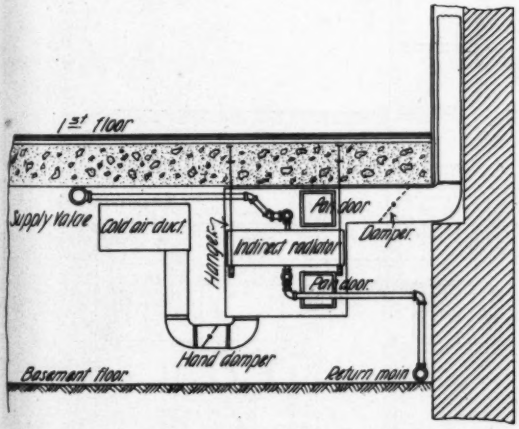
Showing the manner in which some of the indirect stacks were connected and arrangement of dampers, in Mr. Harriman's mountain residence, at Arden, N. Y.

*That these air valves could be omitted from the radiators was due to the fact that the piping was arranged in such a manner that as the water was allowed to rise and fill the system, it pushed the air out above it to the top where it escaped through a vent, there located, to the atmosphere. This escape is so arranged that the water cannot boil in the expansion tank or make trouble in many other ways known to the craft. The steam does not collect in the various radiators simply because there is always an opportunity for it to rise up through the water and escape from the top vent.—Editor's Note.

tains (the Court of the Loggias, and the fountain in the Court of the Pergola Terrace). The control of these lights will be by push button switches located within sight of the fountains. Provision is also made for a large number of lights about the terraces. A switch has been placed in Mr. Harriman's room by means of which about one hundred lights scattered through the corridors and principal rooms may be turned on at one time. This will provide ready means for giving light all through the house without requiring the turning on of individual lights at any point (this in case of burglars, or suspicious noises). In addition to the bracket and ceiling fixtures, many receptacles are scattered about the walls in the baseboards for supplying standing or portable lamps.

Electric Heating.*

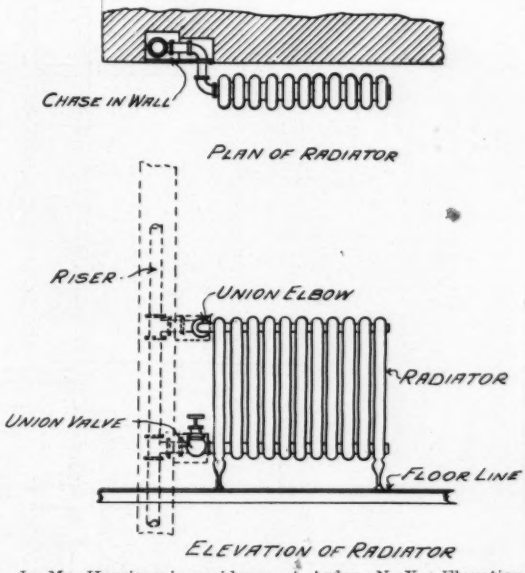
Each chamber which does not have a fireplace, and each bathroom is provided with electric heaters set into the wall behind bronze grilles. Conduits have been run for wires for electric heaters in most of the other rooms, in case these should be required later. Outlets are also provided in chambers and bathrooms for portable electric heaters.



Another installation of an indirect radiator in Mr. Harriman's residence at Arden, N. Y.

The Range in the Kitchen (Electric Heating System).

Provision has been made so that when the house is completed the kitchen will have combined coal and electric range. The electrical part has been designed to have the same capacity, to be able to do the work as efficiently as the coal part; either part may be used separately or both together, if necessary. The butler's pantry will be provided with electric plate warmer.



In Mr. Harriman's residence at Arden, N. Y. Elevation and plan of typical radiator connections for the hot water system. Note that there is a top and bottom connection upon the radiator.

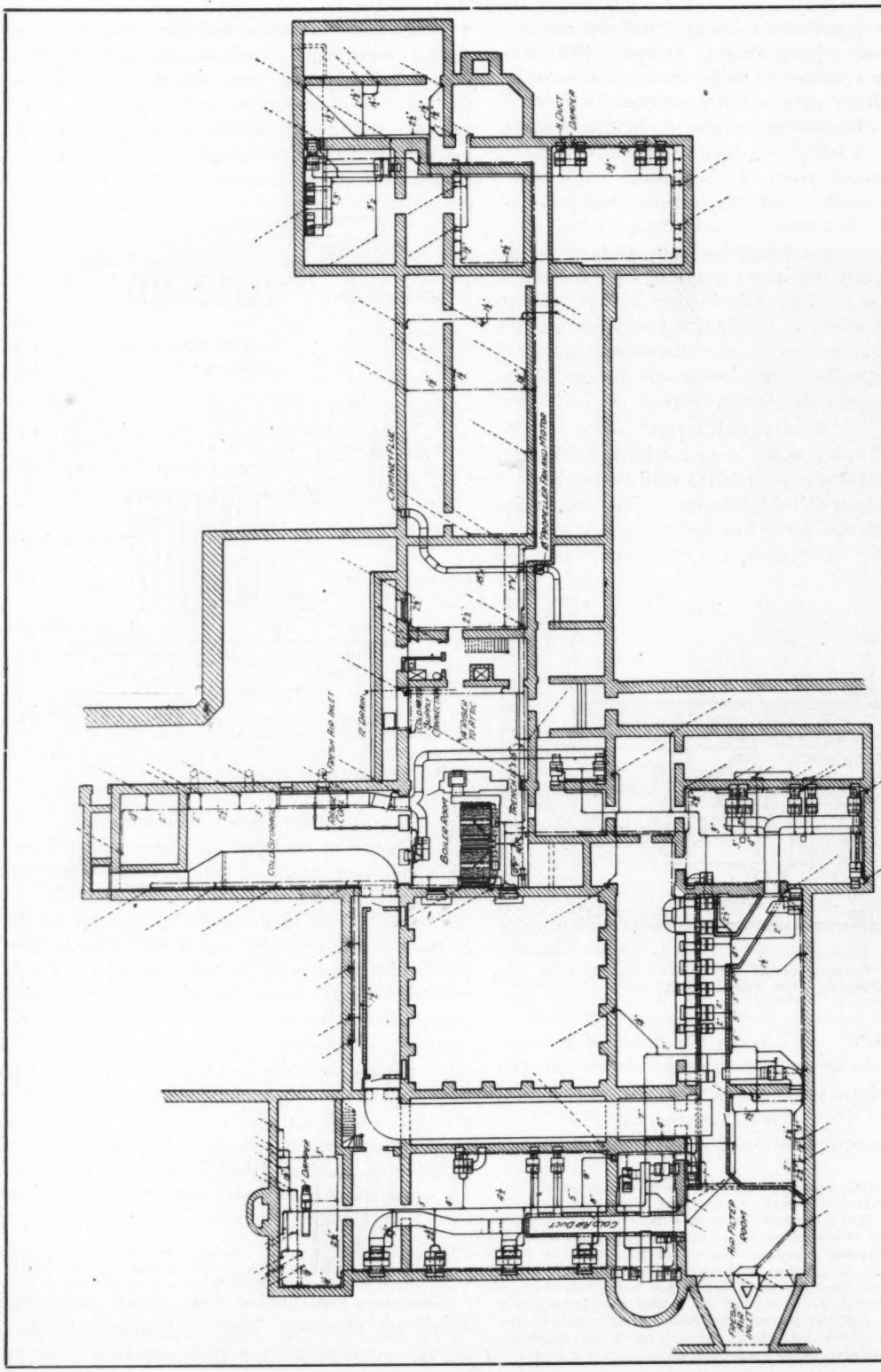
Electric Means of Communication.

The house is equipped with a complete intercommunicating telephone system which will operate 40 stations when the house is completed. In the servants' and in the working quarters of the house, these instruments are of the ordinary wall type. In some rooms, the instruments are of wall type but with all mechanism set behind flush metal plate, while in several rooms a desk type of instrument will be used, the calling switches and other mechanism being set in the wall back of the flush metal plate. In each guest room, and in each principal chamber there is an outlet to which a portable long distance telephone may be connected. In addition to these telephone systems there are the usual annunciators with bells rung from push buttons in the different rooms.

Electricity (Switch Board. Electric Wiring System).

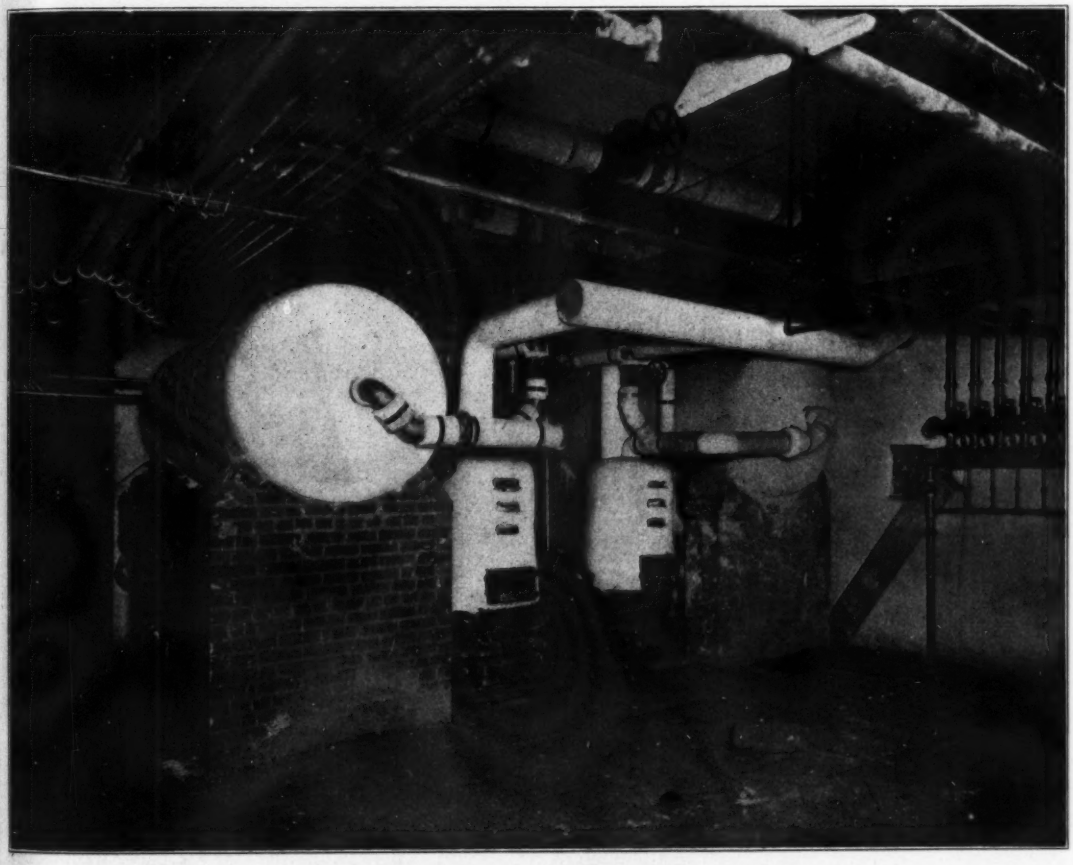
The main switchboard from which current is distributed to various heating, lighting and power circuits, consists of seven panels of blue Vermont

*The electric heaters set in the walls of the rooms not having fireplaces, consist of cast iron boxes, set into the wall with the face flush with the face of the finished plaster. In these boxes there will be Simplex Electric Heating Company's enamel plate resistances set at such an angle as to provide a proper circulation of the air around them, the front of the boxes being covered by bronze register faces. For the additional information contained in these notes, the editor is indebted to the assistance of Messrs. Hollis French & Allen Hubbard, consulting engineers, of Boston, Mass.



Basement plan of the heating and ventilating systems of the E. H. Harriman house at Arden, N. Y.

marble, the total length being 16 feet, and the height of each panel being 70 inches. One panel contains automatic circuit breakers and a solenoid switch. The supply of current to the board is to be taken through 8 cables; by means of the solenoid switch all cables may be tied together to feed the whole board, but if necessary to prevent fluctuations of lights due to large motors, the feeders for the lights may be separated from those supplying the power, by opening the solenoid switch. The control of this switch will be at the power house located at a considerable distance from the house. On the second panel, there are recording wattmeters for measuring the amount of power used in the heating system, lighting system, and for motors, viz., there are 3 separate meters. On the other panels, there are switches for controlling the separate mains from which current is supplied to the different parts of the house. Total number of switches, 39. The switchboard has a marble cornice at the top, and a bronze grille filling the space between the panels and the floor.



The Second Boiler Room in Mr. Harriman's residence. The two boilers here shown furnish the supply for the bath rooms. Attention is called to the hot water tank and its connections.

The Elevator.

There is only one elevator, for it is a low-spread house. The elevator runs from the first to the third floor. It is operated by push buttons at each landing and inside the car. Safety appliances are provided so that the hall doors cannot be opened unless the car is at the landing; and so that while one is entering or leaving, the car cannot be started.

Power Plant.

In order to provide electric power for the lights in the house, on the driveways, about the grounds, and in the various other buildings necessary on the estate, and to operate the inclined railway, Mr. Harriman will probably install a private power

plant, of about 350 kilowatts capacity. The type of plant has not yet been definitely settled, the greatest consideration having been given to the possible use of gas engines.

VACUUM CLEANING APPARATUS.

The house is equipped with vacuum cleaning apparatus, this being located in the basement. There is a system of piping which extends throughout the house, with outlets at different intervals so that by the use of short lengths of hose the various parts of the house may be reached. This apparatus is operated by an electric motor which can be started or stopped from certain outlets in the house.

THE REFRIGERATOR PLANT.

The refrigerator plant was put in by the Brunswick Refrigerator Co. who built all the machinery. The condensing-pumping machinery is driven by direct connected motors, the plant having capacity of 4 tons of ice. The refrigerator room (in the basement) is lined with glazed tiles—floors, walls and ceiling. An ammonia compression system is used, the brine being cooled by it, and then circulated through the refrigerators. The refrigerators have special chambers, provided for fish, meat, milk, and kept at varying temperature proper for the article to be cooled. The refrigerators were built by C. V. Hill Co., and are insulated with sheet cork, and lined with glass. The butler's pantry has its own refrigerator which is of ample capacity, and is lined with white glazed tiles. In addition to the cooling, the plant is arranged to make several hundred pounds of clear ice a day—for freezing caraffes, and for ices, etc. The water to feed this comes through the deep well on the estate—1,100 feet through the solid rock.

THE PLUMBING.

The plumbing throughout the house is by Charles E. Jones, Central Valley, N. Y. In this second boiler room there are 2 650-gallon boilers, for the bathroom supply. The piping runs from the boilers to the headers, and then circulates separately, through individual pipes to each "fixture" (bathroom) in the house. These pipes are made of extra heavy tin-lined brass material. At the bottom of each riser there is a drip-header for draining each individual line separately. It has been seen that the water from the well is carried to the reservoir, returning through the 6-inch main, to the house tank in the attic, cross-connected so as to use either the house tank or directly from the reservoir. There is an emergency tank in the attic, supplied also from the reservoir, and cross-connected in the same way. There is also a line

The kitchen in the E. H. Harriman residence. Observe how conveniently the range boiler is placed out of the way, and also its pipe connections. The plumber at the right looks happy and contented. Evidently "the ghost must have walked recently."

so that the water can be pumped directly from the well for the house supply. There are also rising lines to the attic. There are lines leading to the pools (courts), and to the huge pool (laughingly called the "swimming pool") below the grand terraces, into which ornate dolphins pour jets of water, and which was designed to lend the note of wind-swept, lucid lake to the vast garden effulgence of color. And all these lines are also cross-connected, so as to feed from the house tank or direct from the reservoir.

A shower bath in this finely equipped modern mansion. Notice also the top and bottom connections of the hot water radiator. Query: Was the fitter "killing time" when he disappeared, leaving some of his tools in the boxes at radiator's base behind him?

The Fire System.

The fire system throughout the house and grounds was put in by Mr. Charles E. Jones, Central Valley, N. Y. This fire system is also cross-connected. There are 20 fire outlets in the house, and 20 throughout the grounds. The fire racks on each floor, about 25 in all, are supplied by the Eureka Hose Co., New York City.

The Service Pipes and Sewage Disposal.

All the service pipes are out of sight under a huge tunnel (a pipe gallery). The pipes are galvanized, and cast iron—galvanized for water, cast iron for sewage. It is the Merritt-Erlach system of sewage disposal. The sewage pipes lead down the mountain, to its base, where Mr. Harriman has had put in 3 septic tanks (filter beds). The "pipe gallery" avoids the necessity of digging up the grounds to get at the pipes, if anything is out of order. The septic tank works on the order of the dry cess-pool.

The Baths.

In all the main and guest bathrooms the Federal-Huber Co.'s "Emperia" adamantine porcelain lined French shaped baths with Huber's japanned white exterior finish have been installed. These baths are supported on adamantine porcelain block feet, white metal combination supply fixture with Reliance waste, large china handles on the valves and china knob on waste, white metal supplies to the floor with compression shut-off valves, and with Huber's finishing escutcheons and bath ferrule. The showers are the Federal-Huber Co.'s white metal overhead tubular rain shower and hand spray, compression valves with china cross-handles and name plates, white metal supplies with check valves, mixing column, oval curtain ring with Huber's special nearsilk curtain, curtain hooks and white metal shepherd's crook. The metal work on all the fixtures for the main and guest bathrooms is known as white metal and is manufactured by the Federal-Huber Co. It is a non-corrosive metal upon which a very high polish can be obtained, and as the polish is not a plating but on the body of the metal, it is very lasting, and will always remain bright.

The Toilets.

Federal-Huber Co.'s vitreous "Imperial" siphoning water closet with concealed siphon jets, Imperial boltless screw joint floor plate made integral to special foot of the water closet. Adjusto seat and cover, treated with celluloid, white metal adjustable hinges, Huber's noiseless siphon cistern, treated with celluloid, lined with heavy copper, asphalted at all joints; flush pipe treated with celluloid, celluloid covered escutcheons at tank outlet and inlet to water closet bowl, white metal knee brackets, white metal adjustable rod, guide and porcelain pull and white metal pipe hanger with seat buffer.

The Lavatories.

Federal-Huber Co.'s white Blanko-P marble lavatories, free of veins or streaks, with backs and aprons, rounded at the corners, the lavatories so constructed that the metal apron holders and pockets do not show; extra large white vitreous basins with white metal Reliance waste, "Yale" basin faucets with china handles; white metal trap and supplies to wall of concealed shut-off valves and finishing escutcheons and special design white metal legs. In each lavatory is a bath, in alcove.

The Pantry Sinks.

The large pantry sinks are over six feet in length. They are made of this same white metal. The sink and drain board are of one piece, with standing waste, extra heavy white metal pantry cocks with swinging spout and white metal legs. In the laundry large adamantine porcelain wash trays with integral backs and adamantine porcelain legs are used. All the metal work in the laundry as well as in the kitchen sinks is Federal-Huber Co.'s red metal. The metal is polished very highly without plating, and is not affected like a nickel-plated metal by the odors and acids of the laundry and kitchen. Red metal was used on all of the servants' bathtubs, water closets, lavatories, in the servants' wash rooms and toilet rooms.

The floors in all the working quarters of the house are of terrazo. The ironing and drying will be done by electricity. The engineer's quarters in the basement have bathroom with overhead shower. A fan under the Dutch hood of the kitchen range draws up all the odors of cooking through the chimney.

The supplies (and coal) come up the mountain by the inclined railway, and to the house by a little track (that runs into the Arrival Court). This track has chutes to the coal room in the basement.

The attic is brick lined—terra cotta bricks. It has a slate roof, with copper leaders. There are unique snow guards on this slate roof—*hooks*—that hold the snow until it melts. The snow cannot drive downwards in dangerous plunges.

We have reached the peak of the house, we have gone down into the magnificent scientific equipment in its engineering department, but we have also sounded the great heart of the house! Hospitality seems to stretch its palms in every direction. "We have slept in fairy-land," says Browning, "but we awake with our wrists and ankles jeweled still, for love was in the land we saw." Heard through all the vistas of the gardens, and along all the halls and heights, there spoke the greatest thing in the world—the voice of family affection. To sustain these close, strong, matchless links, this house, after all, was built. Beauty is good, and science is the call, but the most sacred thing on God's earth is the family bond. As we look again towards the crown of hills, we see what the Creator thinks *where peaks are families; altars, the Azure!*

Note.—The writer expresses, with gratitude, her indebtedness to Mr. E. H. Harriman for his gracious courtesies and hospitality at Arden; and to Mr. C. C. Tegethoff, private secretary to Mr. E. H. Harriman; and to Messrs. Carrere & Hastings her best thanks, as to Messrs. Hollis French & Allen Hubbard for their aid and permissions and the "plans" in the preparation of this article; also to Mr. E. T. Ford, manager of the Harriman estate at Arden; and to Mr. Charles E. Jones of Central Valley, N. Y., and to the Federal-Huber Co., New York City.—**L. C.**

Wiping Joints

By Phœnix.

One of the most curious examples of joint wiping I ever witnessed was given by "Little Jimmy" in a town up in the far Northwest. This plumber had to rough in the waste for a water closet, and did not have a single piece of lead pipe long enough for the job.

So instead of going to the shop "Jimmy" proceeded with a juggler's skill **to splice together a couple of pieces of four-inch lead pipe.**

He sat the pipe on end and **wiped that joint vertically,** so to speak, holding the pipes in position with a brick **balanced on the end of the upper pipe,** and performing the work on bended knees on the cellar floor.

He had none of the shop conveniences with him and yet in a very few moments had turned out one of the very best joints I ever saw, and **under such circumstances** that not one plumber in five could, or would have succeeded.

As a plumber pushes the lead around the joint, after it has been properly set up, it looks easy enough, and **seems a very simple operation,** one that any person could almost attain in a very few days; yet some people have practiced on this apparently simple trick for years, and failed.

While the plumber stands there so calmly pouring the hot lead, and deftly catching it on the little wiping cloth a slight move in the wrong direction, or a slip of the wiping cloth may allow the hot lead to burn his left hand in a manner that will necessitate several days'

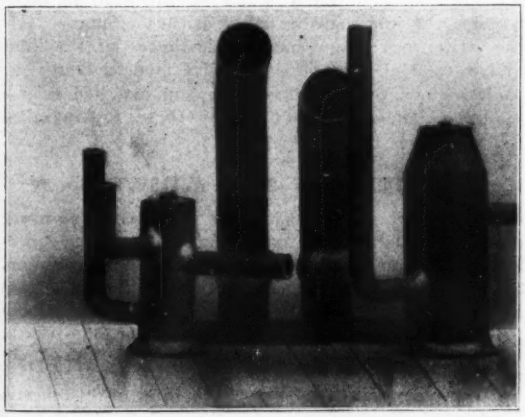


Fig. 53. A fine specimen of joint wiping from "over the divide." The above representation of the art came from the Berkeley Plumbing Company, Berkeley, Calif.

vacation. Accidents are liable to happen to even the most skillful.

About the first thing in this game is **to be sure that the wiping solder is right.** This solder should be about two parts tin, to three parts lead, and when heated to a dull red and poured upon the pipe (never in one spot, or a hole will be melted in the lead pipe) if the solder stiffens and will not push around the joint easily there is something wrong with the solder. Another test is to pour some of the solder on a stone or brick and let it cool.

It should take on a steel gray color and **have small whitish spots upon the surface.** In fact, it looks something like the color of a very light dappled gray horse.

The wiping cloth is generally three inches square and made from bed ticking and is anywhere from nine to twelve folds in thickness. A moleskin cloth will turn out a smoother joint and this kind of a cloth can be obtained at the jobbers. Some of the expert joint wipers prefer a smaller cloth, two by two and one-half inches, for the smaller joints. **The general length of a finished joint on smaller work is from two and one-**

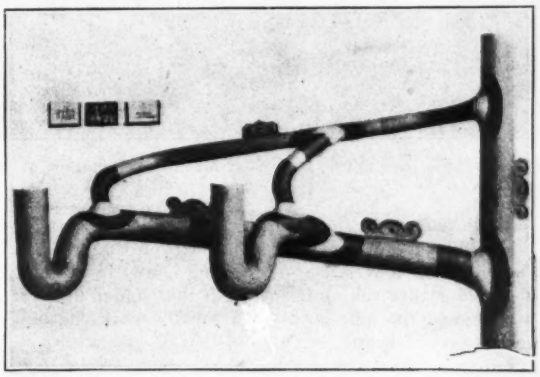


Fig. 54. Another illustration of the craft's lead working, taken from our cousins in England. The traps are hand made from drawn lead soil pipe. This exhibit took first prize and special prize as best specimen of plumbers' work at the Surrey County Art and Technological Exhibition held a short time ago at Sutton, England, and was done by Percy Manser. Illustration reproduced from The Plumber and Journal of Heating.

half to two and three-quarter inches. One of the best craftsmen at this business I know simply takes his jackknife and scrapes the end of the pipe until the outside is bright and then rubs the pipes with chalk for about four inches, next applying the soil. **The chalk assists the soil in getting a hold on the pipe. Soil is made of glue** (either stick or pulverized) **dissolved in water, and when thoroughly dissolved dry lampblack is added** and more water until the mixture resembles a rather thick paste, then boil until thoroughly mixed. **When applied if the soil rubs off easily add more glue.**

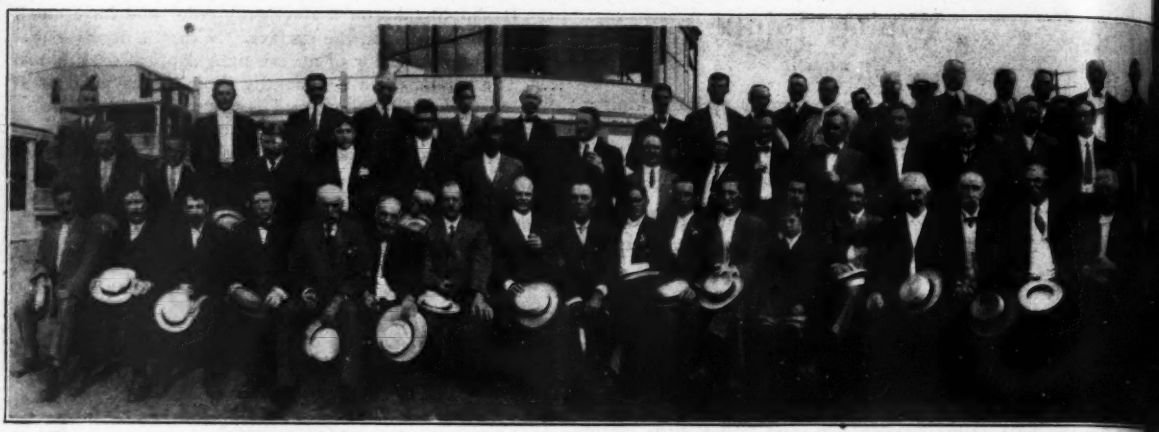
Now line the pipes up so that they are true and the ends fit, one inside the other which will have been spread for the purpose by the turn pin.

The pipes are generally supported upon bricks, although any ingenious man can invent various appliances, which, for shop work, will hold the pipes much more firmly.

When the pipes are fastened so that they will not move and in such a manner that there is from four to five inches space under the ends, it is time to start operations.

A piece of paper should be placed under the joint to catch the surplus solder. **The solder in the melting pot should now be stirred in order to mix the lead and tin,** and with the wiping cloth held in the left hand with one edge projecting just over the tips of the fingers the plumber makes the first pouring.

Do not pour in one place continually or a hole **will**



Members of the Master Plumbers' Association of Boston and vicinity on their annual outing at Bass Point, Nahant.

be burned through the pipe. Carry the hand along the whole distance of the joint and soiled portion and use the left hand (covered by the wiping cloth) in catching the solder that runs off, and push this solder up over and around the pipe so as to gradually work the pipe to the proper heat.

When the joint has acquired an amount of heat **great enough to cause the solder to slide down and off** in spite of attempts to keep it in position, the proper moment has arrived to **drop the ladle and shift the cloth to the right hand.** Some plumbers use two cloths in forming the joint, but an expert will do the job with one. The joint is shaped roughly into form something like an egg and when the mass of solder will tend to hold its place the finishing is begun. The edges of the joint have been nearly cleaned and the bend or curve at which the plumber now holds the wiping cloth should complete that part. The cloth is swung under the joint, then over the joint and the true shape appears with perhaps a few irregularities on top which are removed with a side swipe of the cloth.

Some water should now be blown on the joint in a fine spray to cool it, **or the tin may shift down to the bottom forming drops which will spoil the joint entirely.**

The first attempts may not result in very fine looking specimens, but **are they tight?**

Was the lead wiped on in such shape that no holes were burned in the pipe or that none worked in at the point where the ends of the pipe were joined? That is the more important question.

A tight joint, though rather poorly formed is much to be preferred to one of beautiful outside appearance, and which leaks. In figure 53 some fine examples of joint wiping are shown as made by some of our western craftsmen in California. These joints will bear inspection and show the result of skill and practice.

In figure 54 may be seen a sample of the art as performed in England today, where the practice of using lead seems to have been continued to a much greater extent than in the United States. The traps in figure 54 were made by hand and indicate that the art of bending lead pipe is not entirely forgotten in these days of machinery and progress.

Some plumbers take pride in relating fish stories of how they have wiped joints in difficult places. Under the floor, for instance. A hole cut to one side and two or three looking-glasses propped up at convenient places until they can see the joint in the last glass. The wonder has been to the writer, why it would not have been as well **to have cut the hole** in the floor directly over the place where the joint was to have been wiped. Pipes are now generally run in such shape that a man does not have to fairly stand on his head in order to wipe the joint, and in an experience of many years the writer never saw but two instances of the kind, and in each of these it would have made a better job to have torn out the entire line and installed it in a modern manner. Fight shy of these looking-glass jobs.

Questions and Answers

This Department is maintained for the use of every reader of "Domestic Engineering." We solicit problems from you and will give them our best attention. In stating your questions please give all of the facts as clearly as possible and when necessary accompany your question with a correct layout of the job.

WAS THIS CITY ORDINANCE VIOLATED?

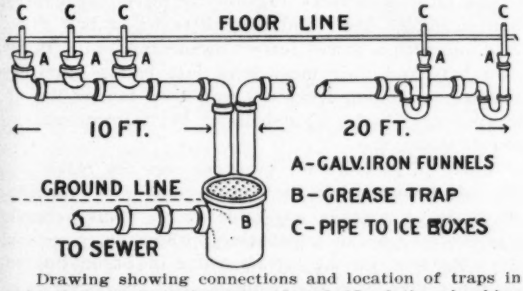
192. Waycross, Ga.—To the Editor of "Domestic Engineering." Sir: I am sending you a sketch of a piece of plumbing which was done here causing a difference of opinion. Our plumbing inspector claims the job is in accordance with the rules and regulations. I contend that Section 15 was violated in not venting the two traps put in on job and in the omitting of traps under the other three Section 15 was again violated by using galvanized iron funnels instead of an open air tray. Also that Section 17 was violated by not venting traps over five feet from grease trap.

Section 15 reads as follows: "Waste pipes from refrigerators or other receptacles in which provisions are stored shall not be connected with house sewers, unless such waste pipes are provided with traps suit-

on August 11. The photograph was taken especially for "Domestic Engineering" by Fred Rankin, of Lynn, Mass.

ably ventilated and in every case there shall be an open air tray to clean traps and refrigerators."

Section 17 says that "All waste pipe from sinks, the contents of which are liable to be grease, shall be properly trapped and ventilated, and shall discharge into a grease trap of glazed terra cotta not less than twelve inches in diameter, such grease trap to be provided with a hopper strainer of galvanized iron. When kitchen sinks are within five feet of grease traps, trap ventilation may be dispensed with. All waste pipes must be conducted into a strainer if possible. A grease



Drawing showing connections and location of traps in which it is claimed Sections 15 and 17 of the plumbing ordinance of Waycross, Ga., were violated.

trap as described above must be placed on all premises where slops or soapy water are liable to be thrown on the ground. Closed grease traps of cast iron, lead or brass, if not less than three gallons capacity, with a four-inch brass trap screw for cleaning, properly ventilated, may be used inside of buildings."

My contention is that an open air tray under refrigerators becomes a separate fixture and should be treated as such, and be trapped and vented. That one tray under the two boxes with one trap properly vented would be the proper way, and that one trap under the **other three** with one trap properly vented would be all right. Please inform.—**C. A. L.**

It would seem that if the conditions are as stated that both Section 15 and Section 17 had been violated. As to the feasibility of the connections suggested, we should like to hear from some of our readers.

ASSOCIATION NEWS

BOSTON PLUMBERS' ANNUAL MIDSUMMER OUTING.

Boston, Mass.—If anybody had gone on a still hunt for a plumber in Boston or in any of the nearby suburbs on Wednesday afternoon, August 11, it is safe to say that he would have had a hard time to find one unless perchance he happened to drop in on Bass Point, Nahant. There he'd have found about all the plumbers that he could ask, for two hundred and fifty of them—**members, friends and guests of the Master Plumbers' Association of Boston and vicinity owned Bass Point that day.** It was the annual midsummer outing of the association and to add to the pleasure of the occasion everyone brought along his wife and family, or if he didn't have a wife his sweetheart or someone else's.

Most of the party went down on the 11 o'clock boat from Boston arriving at the resort soon after noon and there were things doing on that boat. Incidentally Carl Fisher, a Dececo Company salesman, who was one of the guests of the occasion, got a good thorough ducking. Fisher and several other members of the party were on the lower deck forward, which, because of the choppy sea, had been closed to the general public. Things were all right until an extra big wave hit the bow of the little steamer and Brother Fisher got the benefit. But it takes more than a little wetting to dampen Mr. Fisher's smile. Of course some of the party went down on the earlier boat so that they might make a day of it and still others who could get away in time for the 11 o'clock went down later but it was noticeable that most of them arrived in time for the dinner which was pulled off at 2 o'clock.

This dinner was the star number on the program. It was served by the management of the Bass Point House and the bill of fare contained samples of about every member of the finny tribe that could be scared up for the occasion. Some of it though seemed to need considerable liquid encouragement to make it go down.

The hour or more which elapsed between the time of the arrival of the party and the sounding of the

welcome dinner bell was spent on the ball field where **a six inning game was played between the Jobbers and the Plumbers.** The game was won by the Jobbers by a score of 17 to 8 but the defeated team immediately entered a protest on the ground that the umpire, Plumbing Inspector Thomas Wilson of Boston, had roasted them. This was admitted by the Jobbers but they claimed that Mr. Wilson had been impartial in his roasts. The features of the game were the misplays which were pretty well divided among the members of both teams.

After dinner the **members of the association gathered in the square in front of the hotel to be photographed by "Domestic Engineering's" special representative, Fred S. Rankin,** of Lynn. Mr. Rankin was supplied with a revolving panoramic camera with which he was enabled to take an excellent picture of the big crowd.

The rest of the day was given over to the sporting events of which there were numbers for men, women and children. **The first race was the one hundred yard dash for the ladies**—the prizes being two pair of brass candlesticks donated by the Boston Brass Company. This event was won by Mrs. C. A. Doran of Dorchester with Mrs. John Barrigan second.

The one hundred yard dash for men was won by Representative Flint of the Magee Furnace Company. He was awarded as a prize a die stock donated by the Boston Brass Company.

The other events and their winners were as follows:

One hundred yard dash for girls: won by Miss Mary Maloney. Prize, silver purse.

One hundred yard dash for boys: won by Herbert Towne of Wakefield. Prize, pocket knife.

Three-legged race: won by Maher and Berry. Prize, scarf pins.

Wheelbarrow race, with contestants blindfolded: won by Donhue of East Boston. Prize, cuff buttons.

Brace and bit race: won by John C. Matthews of the Joseph Young Co. Prize, the brace and bit used in the contest.

All of the prizes with the exception of the candlesticks and die stock were donated by the association.

While these games were going on in the field the **bowling enthusiasts gathered at the alleys** and enjoyed a hotly contested match. One team was composed of Messrs. Brown, Calahan, Zehringer, Lang, Garvey and Kelly and the other of Messrs. Durkee, McCarthy, Eaton, J. V. McAuliffe, Philbrin and O'Brien. Two strings were rolled, the first team scoring 411 and 468 with a total of 879 and the latter going them twelve points better and winning the match with 445, and 446 and a total of 891.

Among the salesmen who were present as the guests of the association were the following: Sands Z. Brown, of the Central Brass Co.; Frank Campbell, of the Union Soapstone Co.; J. H. Matthews, of the J. H. Young Co.; George W. Burke, Charles Denkler and J. F. Hartigan, of Crane Co.; J. V. McAuliffe and W. B. Hubbard, of W. B. Hubbard & Sons; P. H. McCarthy and John Stevens, of the Locke-Stevens Co.; Vernon Voye of Brown-Wales Co.; F. A. Kelleher, of the W. H. Gallison Co.; A. W. Rich and C. F. Cleave, of R. Estabrook's Sons; George F. Hickmott, of the Boston Brass Co.; F. J. Maher, of the Hercules Iron & Supply Co.; D. J. Gibbons; C. W. Lannigan, F. L. Daly, F. S. Grady, George Maynard, Joseph Maynard and H. W. Thorndike of the F. W. Webb Co.; Carl Fisher and A. R. Russell, of the Dececo Co.; M. J. Hirschfield and Joseph Mayer, of Hirschfield & Mayer; F. E. Eaton and Frank E. Lamb, of the Dalton-Ingersoll Co.; and George W. Durkee, of the Thompson-Durkee Co.

The affair was in charge of a committee composed of **John J. Vogel,** chairman; **David Craig and Thomas J. Tute.**

A very fitting close to the day's events was a double rainbow which appeared in the sky just as the party were getting ready for the return trip.

A. H. French.

SYRACUSE AND AUBURN PLUMBERS' PICNIC.

Syracuse, N. Y.—The master plumbers of this city and of Auburn declared a legal holiday on Wednesday, August 11. And why shouldn't they have done so? It was a bright, clear day; the vacation spirit prevailed, and, above all, it was the day set aside for the annual basket picnic of these two loyal organizations.

As in former years, the members with their families —over one hundred strong—adjourned to Owasco Lake, which had formerly been the place of so many similar events. Surely a more suitable, ideal spot could not have been selected for these festivities. Chartered cars conveyed the merry picnickers to their destination and it did not take much coaxing to get them imbued with the spirit of the occasion. The program called for a varied assortment of events and these were all pulled off in quick succession. There were potato races, foot races, tugs-of-war, three-legged races, hay scrambles, etc. And then there was a ball game. And, oh, such a game! Jerry Cowan came out with his own bats and they must have just had a vibratory treatment, judging from the way they fanned the atmosphere. Charles Campbell, of Watertown, was on the diamond, too.

A day of pleasure for everyone was the result and the ride homeward in the cool evening was a delightful finale to a really enjoyable event. This occasion was prefaced by an introductory fishing party, several days previous, on the private estate of Baron Boysen, on the shores of a pretty inland lake, near Syracuse. On that day Joe O'Donnell is said to have caught a seventeen-pound silver fish. Surely life must be worth living in Syracuse. **E. De Forest Winslow.**

NEWARK PLUMBERS ENJOY CLAMBAKE.

Newark, N. J.—The sixteenth annual outing and clambake of the Master Plumbers' Association of this city was celebrated on Thursday, August 12, under the guidance and supervision of A. Selden Walker, Ira Budd, F. J. Steven, Walter G. Champlin, Robert Berla and Louis Maier. These gentlemen composed the committee, who had arranged the day's pleasure and who made a special journey to Wardell's some weeks previous to make a personal selection of the clams and chickens for the bake. The party left Newark early that morning in a special car that took it to New York where the Steamer Sandy Hook was boarded. Waiting at the New York pier were many friends of the Newarkites who either called Manhattan their home, or else Brooklyn. Among them were ex-National Presi-

dent T. A. Hill, and Tommy Cochrane, who got out of the house before daylight so as not to miss the boat and in their hurry forgot their kodaks. William McCoach, of Philadelphia, who takes care of the national treasury was also there. The same old jolly delegation from Paterson who are seen at any Jersey outing were again on hand. There was Geo. S. O'Neill, J. H White, James Maher, James Quinn, John Baker, Frank Vreeland and Bob Beaumont. Then there were a number of supply men including the "Brothers Crookston," Little Willie and Asa. The latter had along his ever-ready rapid fire camera as usual and a badly dislocated knee cap.

After this jolly cargo had been taken aboard, the Sandy Hook steamed down the bay and after an hour's delightful sail found its way to Atlantic Highlands where another special train awaited the merrymakers

There were five handsome prizes to be contested for. One went to the man making the most base hits in the ball game. M. B. Garrigan took three of the prizes while Theodore Fisher landed two. Garrigan received a silver match safe, a glass cigar humidor and a shaving mug for the best base hits, the hundred yard dash and the hop, skip and jump. Fisher was awarded a handsome stein and a leather bill folder for proving best in both the standing and running jumps.

After the prizes were awarded the picnickers either joined a card game or gathered around Krimke's band which was on hand all day rendering selections from Liszt and Wagner with an occasional variety of George Cohan's best.

At 6:30 the homeward march was struck up and the happy party again sought the trolley cars with a unanimous stamp of approval upon the efforts of the committee. The homeward trip was made by rail direct to Newark.

Members of the Master Plumbers' Association of Newark, N. J., at their annual outing in Wardell's Grove, Port-au-Peck, N. J., on Thursday, August 12, 1909.

At West End station another change was made; this time to special trolley cars for the last lap of the journey. Shortly after noon the plumbers and their friends found themselves in Wardell's Grove, Port-au-Peck, on Pleasure Bay.

The bake was scheduled for 1 o'clock and to satisfy the appetites of the now hungry party, Wardell had some delicious clam broth served under the trees. At the appointed hour seats at the long tables under a canopy of canvas were sought and while course after course of the bake was taken from the sizzling stones a band of Dixie boys sang popular airs.

It was ideal baseball weather and teams were in an incredibly short time selected from among the salesmen and plumbers, the lineup being as follows:

Salesmen.	Position.	Plumbers.
Wood	First base	Baudermann
Deane	Second base	Elder
La Tourette	Third base	Berla
Pollard	Shortstop	Konow
Donnelly	Center field	Canfield
James	Left field	Koether
Frylinch	Right field	Bowden
Garrigan	Catcher	Zeitler
McCormick	Pitcher	Fisher

Umpire—R. Ingraham.

Five warmly contested innings were recorded. The score was 14 to 11 in favor of the salesmen when director of sports Harrison called for the race entries

LANCASTER PLUMBERS' ANNUAL OUTING.

Lancaster, Pa.—The master plumbers of this city had a merry day of it on Thursday, August 12. It was the date set aside for their annual outing and they had one in every sense of the word. Invitations were sent out to several of the near-by associations and in consequence there was a good sprinkling of visitors on the scene. It was a most successful and enjoyable event for everyone.

CONVENTION DATES.

August 24 and 25, 1909.—Regular quarterly meeting of the National Association of Brass Manufacturers in Detroit, Mich.

September 15 and 16, 1909.—Annual convention of the National Association of Master Plumbers of the Dominion of Canada, at Montreal.

New York, N. Y.—Judge Holt has authorized Michael Blake and A. Gordon Murray, receivers of J. B. & J. M. Cornell Co., iron founders, of 601 West Twenty-sixth street, to continue the business for sixty days. A petition was filed against the company last March by the Bethlehem Steel Company and two other creditors with claims for $46,375. The concern was organized in 1847, has a capital stock of $2,000,000, with bonds of $650,000 outstanding.

WHOLESALE PLUMBING AND HEATING NEWS

Trade Conditions on the Pacific Coast and in the Great Northwest.

Never Split Seat Co. reported building new plant at Evansville, Ind.

BUSINESS ON THE PACIFIC COAST.

Business in the northwest seems to have been better when compared to what may be considered a normal business **than it has been in San Francisco.** Some lines of trade have been very good indeed but the lumber and shingle business, which is to the northwest a very large industry, has been very quiet. When this line of trade starts into activity general business will be very greatly improved. Building in all of the northwestern cities is quite active. It is quite evident that crops will be large and will bring good prices and this condition should be reflected in the demand for plumbing and heating goods. Spokane especially seems to be in good shape. Several of the large houses there report business very good and larger in volume than ever before. Spokane has a unique situation, with its fine water power directly in the center of the city, and being the business center of what is known as the "Inland Empire" with its great resources of lumber, mining, fruits, and grain. Spokane cannot prevent itself from being a prosperous city. A fine new hotel is to be built which with land and furnishings will cost about two and one-half million dollars. In Portland Crane Company and Gould Company each have recently moved into fine new store buildings. In Tacoma Crane Company is preparing to build. In Seattle the A. Hambach Co. has probably as fine a supply store as can be found in the United States, and experienced men believe it to be the best on the coast. In San Francisco Crane Company and Holbrook, Merrill & Stetson are building fine stores and while it is too soon to make a detailed report about them they will be up to date. The wholesale dealers on the Pacific Coast have recently acted as a whole in passing resolutions requesting manufacturers of boilers to stencil all standard boilers as follows: "Guaranteed to a working pressure of 85 lbs." and have requested them to leave off the former stencil "Guaranteed to 200 lbs. test." It is believed that this action, if concurred in by the manufacturers, will go far towards eliminating defective boilers. The difference between a 200 lb. test" and the actual working pressure of the boiler is not always understood by many people. Simply because a boiler is marked "tested at 200 lbs. pressure" some people think it will stand a working pressure up to 200 lbs. Under the new plan if it is necessary for a customer to have more than 80 lbs. working pressure he will have to use an "extra heavy" boiler or use the standard boiler at his own risk.

BUILDS NEW ADDITIONS.

John Weekes & Son Company, of Watertown, N. Y., has under course of construction, two three-story brick buildings, 30x125 feet in dimensions each, which will be utilized largely for warehouse purposes. These additions will facilitate business greatly. It has recently equipped a series of model bath rooms in its main building and this arrangement makes a very handsome showroom.

NEVER SPLIT BUILDS NEW PLANT.

The Never Split Seat Company, of Evansville, Ind., is building a new plant of concrete construction, its dimensions being 62x400 feet, says "Construction News."

PLUMBING AND MILL SUPPLY CO. INCORPORATED.

The Harrisburg Plumbing & Mill Supply Company, of New York City, has been incorporated with a capital of $50,000. The incorporators are Albert H. Palmer, Arthur W. Dalton, Charles F. Kern, all of 68 Williams street, New York City.

TO ESTABLISH OFFICE IN CHICAGO.

George Peppard, who has for some time been representing the Galard Company, of Newark, N. J., in New York, has arrived in Chicago, where he will establish headquarters and bring to the attention of the Chicago trade that company's line of Omala finished plumbers' woodwork.

OPENS SHOW AND SALES ROOMS.

The United States Radiator & Boiler Co., of Pittsburgh, Pa., has opened a show and sales room on the corner of Third and Wood streets in that city, under the management of F. M. Mechling, where it is showing a complete line of its boilers, radiators and heating specialties.

DEMAND BETTER STEEL.

At the recent meeting of the American Boiler Manufacturers' Association held in Detroit, Mich., a resolution was adopted insistently demanding a steel fit for use in the manufacture of safe high grade boilers. The resolution complains that for years boiler manufacturers have vainly tried to have the manufacturers of steel furnish them with material which would tend to minimize explosions. Commander Robert S. Griffin, U. S. N., who attended the convention, assured the boiler men of the sympathy of the U. S. engineering department in their efforts to improve standards.

TO BUILD FIVE-STORY ADDITION.

E. T. Davis, owner of the New England Plumbing Supply Co., of Springfield, Mass., will erect an addition to his five-story brick building in that city. The building containing **New England** Plumbing Supply Co. was four stories and basement in height. Last year Mr. Davis found he had to have more room and erected another story. Now he finds he still needs more room, the result is that a contract was signed last week for an addition 40 ft. x 50 ft., five stories in height, to be added to the rear of the old building. In this addition Mr. Davis hopes to be able to carry large stocks of goods, as he finds that buying in carload lots and carrying large stocks enable him to compete successfully with out-of-town jobbers, his aim being to localize the plumbing supply business in his territory.

IRON TRADE MORE ACTIVE IN THE WEST

A much better feeling exists in the trade than for many months previous, owing to the tendencies toward higher prices.

Large supplies of copper reported purchased by Eastern electrical and elevated companies.

GENERAL BUSINESS MORE SATISFACTORY.

Chicago, Ill.—The situation in regard to iron and steel seems to show steady improvement, and no decrease in the demand, with a strong tendency toward higher prices. The railroads continue ordering cars and locomotives; furnace and mill activities are increasing. The steel corporation is reported as operating over 90 per cent of its furnace capacity and indications all point to much better conditions for the coming year. Government reports of crops are extremely favorable and the probabilities are that with a continuance of the ideal weather these reports will be surpassed.

ACTIVITY IN THE PIG IRON MARKET.

Chicago, Ill.—Iron ore from the upper lake docks continues to move at a very large rate, the shipments in July reaching the grand total of 6,693,000 tons. These figures have been exceeded only once in the history of the trade and that was in August, 1907, when the amount reached was 6,806,800 tons. In both the North and South many makers of pig iron have their books well filled with orders. Another noticeable feature is that there seems to be a growing scarcity of labor in these industries, the mills having in the last two years largely increased their output and many mills are today running to almost their full capacity.

COPPER SITUATION FAVORABLE.

Chicago, Ill.—In the report issued by the Copper Producers Association for July an increase in the home consumption of copper is shown amounting to nearly 15,000,000 pounds or nearly 25 per cent, as compared with that of June. Nearly every company in the country is working to its capacity and the demands are greater than they were two years ago. It is reported that the Boston Elevated has purchased several years' supply, the amount making a total of 3,000,000 pounds, and that the Massachusetts Electric Company has also taken on about 900,000 pounds of copper which is something like a two years' supply. Business men seem possessed of greater confidence and the hand-to-mouth character of buying is apparently being abandoned and orders of a much more extended scale are being given. A glance at the summary of exports of copper in the following list, covering the last four years, will give one a pretty good idea of the improvement:

Exports of Copper.

	1909.	1908.	1907.	1906.
January	19,190	33,019	17,039	15,307
February	13,886	24,640	9,174	15,801
March	20,824	21,670	13,432	16,433
April	28,333	31,853	17,363	16,433
May	31,473	22,640	9,036	19,260
June	33,774	29,999	16,470	18,634
July	35,046	17,840	14,774	18,309
August	.....	25,906	13,458	20,433
September	.....	19,428	17,157	14,119
October	.....	21,962	29,161	17,528
November	.....	19,346	34,087	18,451
December	.....	21,890	37,685	14,855
Total	182,526	290,243	228,836	205,460

NEW YORK METAL MARKET, AUGUST 17.

Copper, Prime, Lake	$13.50
Copper, Electrolytic	13.15
Antimony, Cookson's	8.62½
Lead	4.30
Straits Tin	29.95
Spelter	5.65

CHICAGO IRON MARKET, AUGUST 19.

Southern, No. 2 Foundry	$16.85-17.35
Northern, No. 2 Foundry	17.00-17.50
Lake Superior Charcoal	19.50-20.00

August 19, 1909:

Foundry iron was the same price as the week previous
50c less per ton than the year previous
Copper was same as the month previous
¼c less than the year previous

CHICAGO OLD METAL MARKET.

Chicago, Ill.—Dealers' buying prices are as follows:

Clean heavy copper and wire	$12.00
Light copper	10.75
Heavy composition	11.00
Heavy yellow brass	8.50
Light brass	6.25
Heavy lead	4.00
Tea lead	3.50
Scrap zinc	4.00
Block tin pipe	24.00

NEW YORK OLD METAL MARKET.

New York.—Dealers' buying prices are as follows:

Heavy crucibled copper	$11.75 to	12.00
Heavy copper wire	11.25	11.50
Light copper	10.25	10.50
Plumbers' cocks and faucets	9.25	9.50
Heavy brass	8.25	8.50
Solder joints	6.25	6.62½
Heavy lead	4.00	4.10
Tea lead	3.75	3.85

St. Augustine, Fla.—J. C. Libby, of 38-40 St. George street, has been awarded the contract for the steam heating, plumbing and gas piping for the St. John's County School building. Amount of contract is $5,719.50.

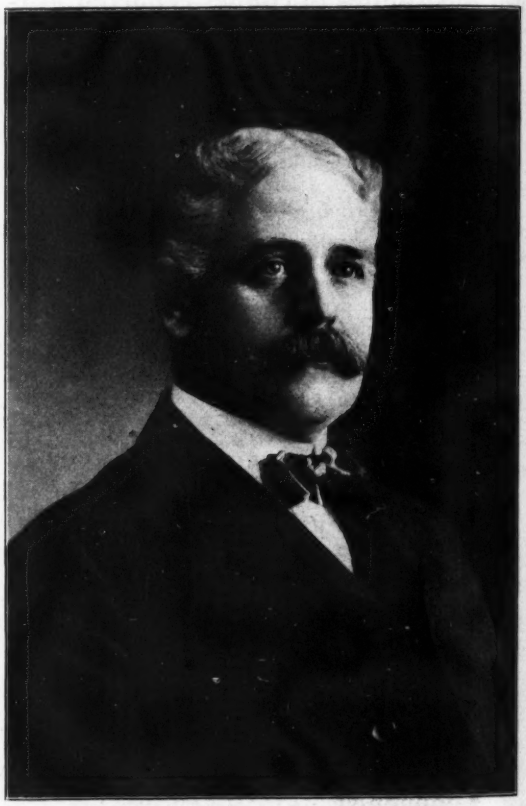
DEATH CALLS ON MEN PROMINENT IN THE TRADE

Frederick W. Conradt, treasurer of the Great Western Pottery Company, of Kokomo, Ind., and Tiffin, O., and Cornelius Kendall, of Toledo, O., among those whose days are ended.

John Date, Montreal's oldest plumber, passes on at the age of 86.

F. W. CONRADT PASSES ON.

Frederick W. Conradt, treasurer of the Great Western Pottery Company, of Kokomo, Ind., and Tiffin, Ohio, passed on at his home in the latter city on Saturday evening, August 14, in his fifty-second year. His death was wholly unexpected as he was apparently enjoying good health until a few minutes before he died. His demise is a hard blow to his family, as well as to his many friends. On the day of his death he arose early and as usual went about his manifold duties with no thought of illness. After his noonday luncheon he complained of pains in the region of the heart but thought little of the matter. In the afternoon he had an engagement with R. M. Fielder, of Trenton, N. J., and visited the office of the Pottery, where he looked after some business which needed his attention. Accompanied by Mr. Fielder he returned to his home about 5:30. Soon after reaching home he had another attack and after asking Mr. Fielder to serve at dinner he went to his room to lie down. He walked upstairs and was crossing the room to his bed when he was stricken. His wife was in the room at the time and three physicians were summoned and arrived in a few minutes, but Mr. Conradt expired before they reached him. They pronounced death due to "angina pectoris," contraction of the muscles of the lower part of the chest. Mr. Conradt was born in Peru, Ind., December 31, 1857, the son of Gottlieb and Mary Conradt, who both survive him. His early education was obtained in the public schools at Peru, after which he took a course in pharmacy at a college in St. Louis, Mo. Having received his degree he purchased a drug store in St. Louis, which he conducted successfully for ten years, when he sold it and returned to Peru, where he became associated in business with his father and his brother, Albert V. Conradt. In 1893 Mr. Conradt with his father, his brother and W. G. Coxon organized the Great Western Pottery Company at Kokomo, Ind., his father being elected president of the company and he was made treasurer, an office he held until his death, and he was very active in building up the business of the concern. In May, 1899, the company acquired the Brewer pottery plant at Tiffin, Ohio, and Mr. Conradt and his wife removed to that city, where he assumed the management of this plant, and it was through his ceaseless efforts that it was placed among the leading of its kind in the country. In 1904 the Tiffin Art Metal Company was organized and a fine manufacturing plant was erected. Mr. Conradt was one of the heaviest stockholders and was elected president of the company, an office he also retained to his death. Last winter he purchased the business of the Kalamazoo Roof Flange Company, of Kalamazoo, Mich., moved it to Tiffin, Ohio, and continued the business under the name of the Bullard Specialty Company. Mr. Conradt had also extensive interests in various enterprises throughout the country. He was a director of Tiffin Savings bank and of the Commercial National bank at Tiffin, Ohio. He was held in high esteem by all who knew him, and as a business man he won the confidence of all. As an employer he was loved by his men, and at Tiffin, Ohio, he was known as "the best liked man at the pottery." On December 21, 1892, he was united in marriage to Miss Margaret Haugh, who, with a daughter four years old, Mary Josephine, survive him. Beside his parents, who reside at Peru, Ind., one brother, Albert V. Conradt, secretary of the Great Western Pottery Company, of Kokomo, Ind., and one sister, Mrs. A. H.



The late Frederick W. Conradt, of Tiffin, Ohio.

Kalbfleisch, of Peru, survive. His funeral took place Tuesday afternoon from the handsome residence he built a few years ago on Sandusky street in Tiffin, and it was attended by a large gathering, in which were seen many men prominent in the plumbing trade, who, in many cases, had come large distances to show him the last honor.

CORNELIUS KENDALL PASSES ON.

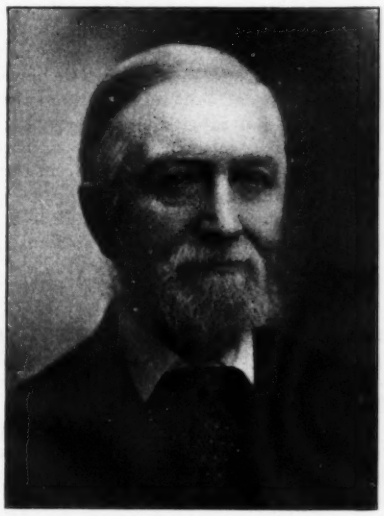
Cornelius Kendall, vice-president and general manager of the Shaw-Kendall Engineering Company, of Toledo, O., passed on at the Toledo hospital in that city on Sunday, August 15, in his 70th year. Mr. Kendall was born in Quincy, Ill., in 1839, and with his parents moved to Chicago in 1848. During the civil war he was engaged in business with his father and brothers, carrying out large government contracts. In that stormy period Mr. Kendall was also a member of the Board of Trade Battery of Chicago. At the close of the war he met D. C. Shaw and with him and John Davis engaged in business in Chicago. After the fire Mr. Kendall came to Toledo and with his partners established the Shaw & Kendall factory, which later became Shaw, Kendall & Co., with Wm. Hardee as a member of the firm. Later J. L. Wolcott became identified with the company which finally engaged in the oil business and established the Buckeye Supply Co., W. C. Hillman entering as a partner later on. These two companies finally merged into the National Supply Co., which is one of Toledo's most flourishing and successful business enterprises today. In 1896 he founded the Shaw-Kendall Engineering Company, of which he was vice-president and general manager at the time of his demise. He was one of Toledo's most prominent veteran business men and a generous supporter of its charitable institutions. In 1872 Mr. Kendall was married to Miss Ida Knapp, who survives him. A brother, J. C. Kendall, of California, and four sisters, all residents of Chicago, are also living. His funeral, which was held last Wednesday afternoon, was well attended. The honorary pallbearers were: D. C. Shaw, W. S. Brainard, Wm. Hardee and David Robison, Jr. The active ballbearers were: C. M. Foster, R. J. West, W. M. Bellman, W. L. Brown, Chas. A. Russell and C. C. Whitmore.

RODERICK P. CURTIS PASSED ON.

Roderick Perry Curtis, president of The Curtis & Curtis Co., of Bridgeport, Conn., passed away at Southport, Conn., Monday evening, Aug. 9, at 6:10 o'clock, as briefly told in this column last week. His untimely demise was the result of an automobile accident which occurred several weeks ago in the vicinity of Westerly, R. I. Mr. Curtis did not show the effects of injuries for several days, when evidence appeared tending to show that a blood clot on the brain existed. His condition caused alarm and he went to the Maine woods to recuperate. The first week in August his condition became such that he was advised to return home. Specialists were called in and trepanning finally resorted to but without success. Mr. Curtis was born in New York, the son of Lewis A. Curtis, in 1860. The family removed to Southport in 1868. He has lived in Southport ever since and was graduated from the Cheshire Academy. With Wm. D. Forbes, in 1882, he founded the firm of Forbes & Curtis to manufacture the Forbes' patent die stock. In 1887 Mr. Forbes' interest was taken by Lewis B. Curtis and the firm of of Curtis & Curtis formed to continue the business. In 1900 the firm was incorporated under the name of The Curtis & Curtis Co., Mr. Curtis being elected president and secretary, which positions he held at the time of his death. Mr. Curtis was also secretary and treasurer of the Connecticut Golf League and an enthusiastic golfer. He was treasurer of the Pequot Library, in which he took an active interest, and a member of Trinity church. He is survived by a widow and three children, the eldest, Edward Livingston Wells Curtis, who recently graduated from Yale, Lewis and Louise, both minors. He was prominent in social affairs and active in the Sons of the American Revolution, being a member of the state board of trustees. He was also a member of the New York Yacht club, Bridgeport Yacht club, Algonquin club, Brooklawn Country club, New Haven Country club, Union League club, Commercial club of Charleston, S. C., Bridgeport Republican club, B. C. M. M. R. club of Southport, Manufacturers' Association of Bridgeport, member of Corinthian Lodge, No. 104, F. & A. M., and a 32nd degree Mason. He was also director of several manufacturing corporations. Lewis B. Curtis, president of the State Branch of the Sons of the American Revolution and a resident of Southport, is a brother of the deceased.

MONTREAL'S OLDEST PLUMBER PASSES ON.

John Date, one of the oldest master plumbers in the Dominion of Canada, passed on recently at his



The late John Date, of Montreal.

home in Montreal, Can., after an illness of some two months. At the time of his death Mr. Date was 86 years of age and had been connected with the craft for over 65 years. Early in the present year he retired from the active part of the business which fell to his sons Samuel and Henry Date. Mr. Date was born in Tavistock, England.

PERSONAL MENTION

T. J. Nagle, the sunny-tempered representative of Hays Manufacturing Company, of Erie, Pa., was in Chicago this week calling on the trade. He reported business good.

Martin Brennan, familiarly known to the plumbing trade, particularly in New York state, has accepted a position with the John Douglas Company, of Cincinnati, Ohio, to represent it in Buffalo, N. Y. and surrounding territory.

W. A. Russell, president of the W. A. Russell & Company, of New York City and Waterbury, Conn., was in Chicago this week on his annual trip to the large cities in the Middle West, including Milwaukee, St. Paul and Minneapolis.

E. E. Pedlow, northwestern representative of the Rickersberg Brass Company, of Cleveland, O., has been ill at a hospital in Oshkosh, Wis., for the past two weeks. He is now recovering and expects to be out again in less than a week.

"Geo. E. Downe to the bat and Leonard S. Downe on deck." Among the **chroniclers of the sporting press** it might so be written. By the prosaic trade newspaper man it will be written another way, for what we want to convey is that the second generation of heating salesmen is coming to the fore. Leonard S. Downe is the eldest son of that peerless boiler salesman, George E. Downe, now head of the boiler department of the American Radiator Company. Mr. Downe, the younger, had his initial experience as a salesman on the city force of the International **Heater Co's. Chicago** branch, in which work he became acquainted with the heating trade of the South side. He now undertakes larger responsibilities. He has associated himself with W. A. Russell & Co., manufacturers of air valves, floor and ceiling plates and other heating specialties. The line is a well-known one, and is to be increased soon. Mr. Downe will sell to the jobbing trade in the middle west, including Buffalo. Watch out for Leonard Downe, for, in addition to being the son of a popular father, he has elements of popularity in himself, which will attract many friends to him.

REMOVE LATRINES FROM FIFTEEN SCHOOLS.

Trenton, N. J.—Following out a resolution adopted by the Board of **health** several months ago, the School Commissioners this summer are removing from about fifteen schools the Latrine water closets in use therein and are substituting individual closets. The Latrine closets were condemned by the Board of Health as unsanitary and two resolutions on the subject were adopted by the board. One was that the Latrine closets should not be put up in any new schools. The other resolution was that the Latrine closets in the schools already constructed should be removed as rapidly as practicable. It is in compliance with this latter resolution that fifteen schools are now being equipped with new individual closets. Plumbing Inspector Geo. W. Feaster is very much opposed to the Latrine closets and has been aggressive in having the Board of Health take action against them. Mr. Feaster a few weeks ago held up the work of the School Commissioners in connecting the Grant avenue school with the city's sewer system because there were Latrine closets in the school, but when the matter was appealed to the Board of Health it was shown that these closets were not being installed at the time, but that they already were in the school. Consequently the connection with the sewer was allowed to be made. Since then, however, this school has been included among those in which new individual closets are being installed.

ASSOCIATION OF BOARD OF EDUCATION DESIGNING ENGINEERS ORGANIZED.

New York, N. Y.—In the rooms of the Board of Education in this city a very important meeting was held some time ago resulting as it did in the organization of the **Association of Board of Education Designing Engineers,** whose objects are "the promotion of the design and installation of mechanical, heating and ventilating, electrical and sanitary engineering in connection with the public schools and its operation, and the maintenance of the high professional standings of its members." To this end the association will hold meetings for the reading and discussion of professional papers and provide for their publication, and also for discussion of any communication that may be deemed expedient and aiding in interchange of experience among its members.

Election of Officers.

The following were elected to serve as officers of the association until their successors are elected at the annual meeting which will be held in St. Louis, Mo., on Tuesday, March 15, 1910:

President, James H. Brady, Chief Engineer, Kansas City, Mo.

Secretary and Treasurer, Daniel A. Casey, of Boston, Mass.

The Constitution and By-laws of the new organization were unanimously adopted after a general discussion.

The meeting was attended by the following gentlemen who all became charter members of the new organization:

S. A. Thomas, Chief of the Electrical Division, New York City.

J. H. Lindsey, Assistant Heating Engineer, New York City.

John H. Barbee, Sanitary Engineer, St. Louis, Mo.

W. H. Dewar, Plumbing Inspector, New York City.

Claude A. Bulkeley, Chief Engineer, St. Louis, Mo.

James H. Brady, Chief Engineer, Kansas City, Mo.

W. P. O'Toole, Sanitary Engineer, Boston.

C. F. Eveleth, Heating Engineer, Boston, Mass.

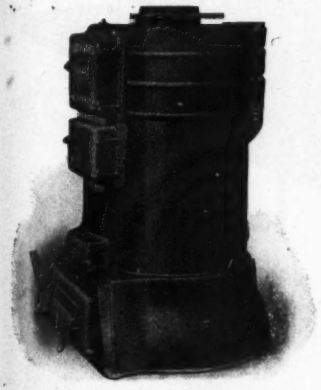
B. B. Hatch, Electrical Engineer, Boston, Mass.

C. H. McCann, Heating Engineer, New York City.

While the charter members were in session at the meeting an excellent photograph was taken, which is reproduced on page XXV in this issue of "Domestic Engineering."

The Heating Harvest.

Advertising seed (explaining the merits of Hot Water, Steam and Vacuum heating) planted in publications of high standing and wide circulation is bringing a rich harvest of heating orders to the Trade. Intensive cultivation with printed matter, booklets and personal letters has increased the yield to a bumper crop of orders.



IDEAL Standard Water Boiler
known among housekeepers the country over.

Wise dealers are now laying in full stocks of IDEAL Boilers and AMERICAN Radiators preparatory to garnering in the heating contracts from these broadly cultivated fields. It is going to be a very busy Fall—better get your orders in as early as possible.

AMERICAN & IDEAL
RADIATORS & BOILERS

A Heating Outfit is More Efficient with NORWALL and SYLPHON SPECIALTIES

AMERICAN RADIATOR COMPANY

General Offices, 282-286 Michigan Ave., Chicago.

New York	Cincinnati	Cleveland	Atlanta	Brantford, Ont.	Denver
Philadelphia	Boston	Milwaukee	Minneapolis	Seattle	St. Louis
Pittsburg	Buffalo	Indianapolis	Kansas City	Omaha	San Francisco
Washington					

PACIFIC COAST

CONDITIONS IN THE PLUMBING TRADE AT FRISCO.

San Francisco, Cal.—As business conditions in this city approach normal the plumbing trade also is becoming better settled and the deranged conditions that have been in evidence since the fire have gradually disappeared. Naturally there are questions of much weight that remain to be solved but the relations between employers and employees are still of a most amicable nature and the great problems that are to be solved are being worked out together to the satisfaction of both parties. One of the great disadvantages that was encountered in the days immediately following the great disaster was the fact that there was such an influx of workmen from outside points who were not acquainted with the workings of either the journeymen's organizations here or the Master Plumbers' Association. Naturally it was with increased difficulty that amicable relations were kept up during those stirring times, but to the credit of both sides it may be stated that no serious trouble resulted nor has any developed since. Gradually conditions have become more and more nearer normal as the new journeymen have become acquainted with conditions here and with the city's methods of doing business. Many of the transient members of the trade have gone on and within the past year the number of journeymen has been decreased. There are still more than there were at the time of the fire but most of those here now have settled and have become a part of the permanent population. Work is now slightly more plentiful than it was a few months ago but there are still more plumbers than there is steady work for. At the present time there is considerable school work being done and during the next few months it is expected that there will be considerable work on public buildings of this character done. Nothing definite has been decided upon yet in reference to the proposition of building a new city hall, and it will probably be some years before there is much plumbing work to be done on the structure that will be erected to house the public officials. Most of the very large buildings for the new San Francisco have already been erected but there is still much work to be done on the smaller class of structures.

Los Angeles, Cal.—Bids are being invited by this city for the furnishing and delivery of fifty tons of pig lead for caulking purposes.

San Francisco, Cal.—V. E. Powers has been awarded the contract, valued at $3,750, for the plumbing work in the building being erected by the Concordia Club on its property on Van Ness avenue.

San Francisco, Cal.—W. S. Snook & Son have secured the contract for the plumbing work in the new building now in course of erection in the Mission district by the Mission Savings Bank. The contract is valued at $6,225.

San Francisco, Cal.—The plumbing contract for the new Prager Building, at Market and Jones streets, has been secured by Ross & McCormick, the consideration being $1,775. This applies to only the first portion of the building. As soon as this part is finished work will be started on the other and another contract will be let for that.

San Francisco, Cal.—Active work has commenced on the laying of the cast iron pipe for the auxiliary salt water fire protection system and considerable of the pipe has been hauled and distributed along the streets. A number of the cistern have been finished and tested to the satisfaction of the engineers of the board of Public Work.

WITH THE MAKERS

THE MUELLER TESTING MACHINE.

Perhaps no single object shown at the National Association of Master Plumbers in Detroit attracted more attention than the ingenious device of the H. Mueller Mfg. Company for testing its self-closing work. In addition to demonstrating the company's product it proved a welcome convenience in supplying drinking water to delegates and visitors.

Two Mueller self-closing basin cocks equipped with Primo handles were kept in constant operation by the

The Mueller Testing Machine.

machine. These cocks were attached to a service pipe and at every opening discharged water into a tank. The operation was just the same as it would have been in actual service, excepting that the cocks were opened by machinery instead of by hand. A small motor kept the machine in motion. The company has applied for a patent on the device.

The machine was designed and built for the express purpose of testing self-closing work at the factory in Decatur, Ill. It affords a means of opening and closing a cock as often in a limited space of time as would ordinarily occur in years of actual service, and the conditions are made as nearly alike as possible.

At the Mueller factory a self-closing basin cock was placed on this machine and kept in constant operation

for 466 hours. A continuous run was possible owing to the fact that the Mueller plant is in operation day and night. The duration of the test was practically twenty days and the cock was opened and closed 1,500 times every hour or 699,000 times during the test.

If in actual service the cock had been opened four times every hour it would have required twenty years to have equalled the number of times it was opened during the test.

The working parts of this and other cocks tested in like manner were shown to the delegates and visitors to the convention. The only appreciable wear was on the tracks for the roller bearings between the cap and the bonnet, and a slight wear on the rollers. It was so small, however, that there is no question the cocks so tested could have repeated the performance and still be in serviceable condition.

BOOK REVIEWS

"Sanitation, Water Supply, and Sewage Disposal of Country Houses," by Wm. Paul Gerhard, C. E., New York; D. Van Nostrand Company, 23 Murray street, New York City, 7¾ x 5¼", 328 pages, 114 illustrations, $2.00.

The author of this book has long been engaged in the practice of sanitary engineering and in preaching sanitation. In both fields of endeavor he has been a conspicuous success. In this work he tells us that his aim has been to tell his readers what to do rather than how to do it. The book therefore indicates sanitary principles which, if carried out, will result in sanitary houses. Naturally the book falls into three parts: The first treats of the general subject of sanitation of country houses, presenting the advantages of country life and the requirements which are essential to healthfulness in country residences. The second part gives detailed advice as to how to procure satisfactory water supply, and the third section treats of sewage disposal for houses which cannot be connected with a sewer system, and in this department Mr. Gerhard has paid particular attention to septic sewage disposal systems. The contents of the book show how thoroughly Mr. Gerhard has entered into his subject and with what enthusiastic cheerfulness he has endeavored to transmit to the reader his own joy in his profession. **J. K. A.**

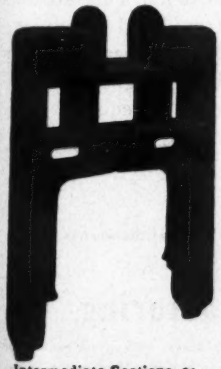
TRADE LITERATURE

From Famous Manufacturing Company, Grand Rapids, Mich.: "Famous," a pamphlet, 12 pages 6x9¼ inches, showing some of the specialties made by this company, consisting of nickel plated bath room fixtures, reamers, hack saw frames and blades, wiping cloths, washers of various descriptions, and Fuller balls.

From Rolf-Martin Company, Cass and Wells streets, Fort Wayne, Ind.: "Bulletins Nos. 1 and 101," illustrating and describing the Romarco Wizard, Junior and Wayne gas water heaters and the Martin cellar traps and specialties. In describing the Romarco heater great emphasis is laid on the fact that its burner is so constructed that the greatest amount of heat is obtained from a minimum gas consumption. A clear blue

CAPITOL BOILERS AND RADIATORS

When you talk Heat to a Customer



Intermediate Sections, 25 Series Improved Capitol Boiler

Show him the real features of boiler construction. He'll be anxious to know, because he's been reading and studying up on the subject. Show him these features of **Capitol Boilers:**

- Divided Section—a guarantee of all winter service.
- Unequaled amount of prime heatiug surface.
- Thin, quick acting waterways.
- Deep fire-pot.
- Easily cleaned flues.
- Rocking and dumping and locking grates.
- Countersunk header—dry steam.
- Guaranteed ratings.

To help you talk "heat" we will send you a framed photo showing sectional view of our Improved Capitol Boiler to hang in your office or showroom.

Catalog?

United States Heater Company.

General Offices and Works: Fort St. and Campbell Ave., DETROIT, MICH.

BRANCHES:		SALES AGENCIES:
NEW YORK	129 Worth St.	NORFOLK & RICHMOND, VA., Virginia-Carolina Supply Co.
CHICAGO	34 Dearborn St.	MINNEAPOLIS, MINN., Plumbing & S. F. Supplies Co.
OMAHA	916 Farnam St.	ST. LOUIS, MO., L. M. Rumsey Manufacturing Co.
DETROIT	139 Jefferson Ave.	DENVER, COLO., Kellogg & Stokes Stove Co.
KANSAS CITY OFFICE	413 N. Y. Life Bld.	DULUTH, MINN., Duluth Plumbing Supply Co.

flame is produced, and the conical shape of the water chamber permits a large air space for the fire. The Martin cellar trap is described as a hand hole trap, bell trap, stench trap, cesspool and back water trap, combined. It is said to be the original backwater trap with a floating seal. It was perfected after many years of labor and practical experience in cellar drainage and the manufacturer adds that after rigid tests and over ten years' use he is able to guarantee that it will give entire satisfaction.

PATENTS

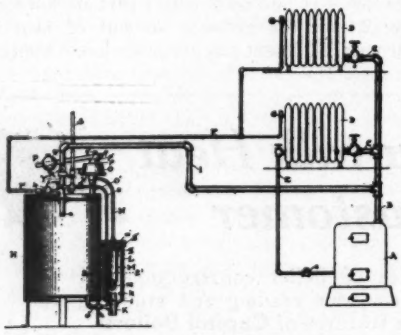
928,040. Low-Pressure Fluid-Heating System. Egbert H. Gold, Chicago, Ill.

928,047. Antifreezing Faucet or Street-Washer. John T. Harnett, Philadelphia, Pa.

928,063. Water-Heater. Alphonse F. Moneuse, New Rochelle, N. Y.

929,092. Humidifier. James Kelly, Providence, R. I.

929,720. Heating System. James L. Sparks and Edward R. Eddins, St. Louis, Mo. Fourteen claims are made for this invention, the first one reading as follows: In combination with a steam heating system, an air pipe in addition to the circulating pipes connected with the system, means to prevent the flow of steam in material quantities from the system into the air pipe, a



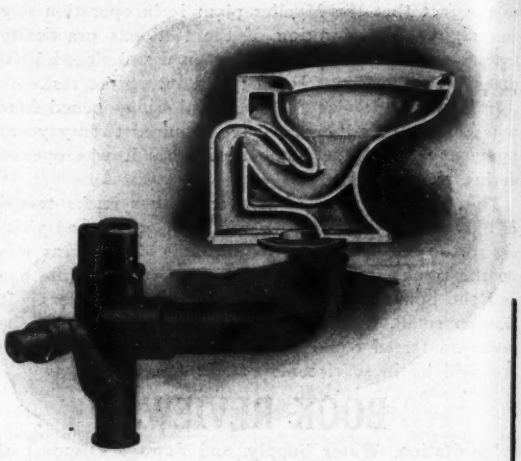
closed tank connected with the air pipe and having a discharge pipe provided with means to prevent the entrance therethrough of air into the tank, an inlet pipe for supplying steam to said tank to discharge the air therefrom and to create a vacuum therein, means to control the flow of steam through the inlet pipe into said tank, and a thermostat in the path of the air discharged through said discharge pipe for controlling said means for controlling the flow of steam into the tank."

929,110. Device for Cleaning Pipe-Lines. Edward R. Reeser, Tamaqua, Pa., assignor, by mesne assignments, to National Water Main Cleaning Company, New York, N. Y., a corporation of Maine.

929,116. Gas-Stoppage Alarm. William E. Apt and Edmund L. Schott, St. Joseph, Mo.

929,126. Heating System. Egbert H. Gold, Chicago, Ill.

929,367. Three-Way Valve. Carl E. Andersson, Eskilstuna, Sweden, assignor to Aktiebolaget Eskilstuna Separator, Eskilstuna, Sweden.



Republic All Around Adjustable
Iron Closet Bends
Outlast Any House

They will save you time, money and material. We are selling thousands of these Bends to progressive plumbers who have broken away from the old, unsatisfactory, unsanitary methods of connection. We have yet to find a dissatisfied customer. The Republic Iron Bend is adjustable. It will fit ANY roughing-in measurement; it may be installed when job is roughed in; furnished with long or short inlets as required.

Absolutely guaranteed to stand peppermint, smoke and water tests.

Write for literature and special discounts

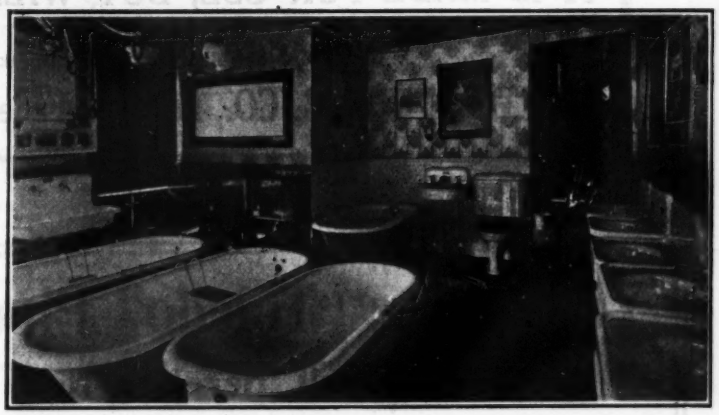
Republic Manufacturing Co.

Manufacturers and Wholesalers of
Plumbing Supplies
123-125 W. Washington St.
CHICAGO

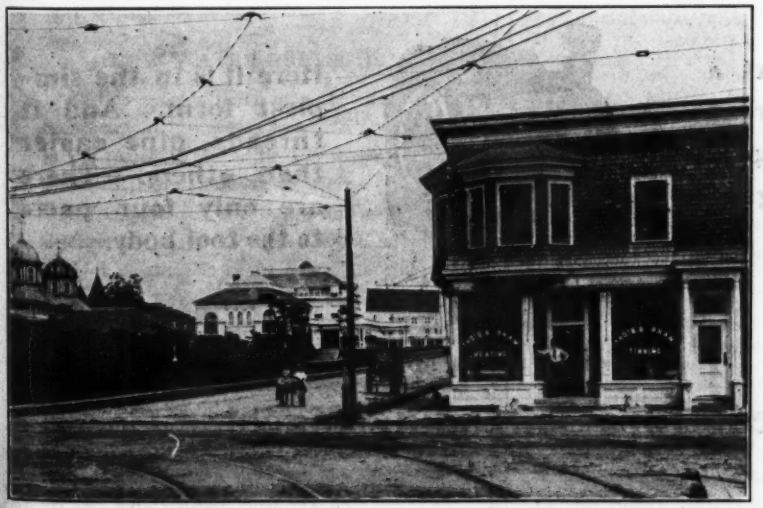
Twentieth Century Plumbing Emporiums

Recently visited by representatives of "Domestic Engineering"

View of booth displaying plumbing fixtures as seen by our Mr. Winslow upon a recent visit to the up-to-date establishment of the J. A. Ahler Plumbing Company at Knoxville, Tenn.



Display of plumbing goods found by our Mr. Carson in the modern establishment of the enterprising plumbing concern of Young & Gast in Lancaster, Pa.



The attractive front of T. B. Barham's plumbing establishment located upon an accessible corner at West End, Long Branch, N. J.—Picture obtained by our Mr. Fundinger.

flame is produced, and the conical shape of the water chamber permits a large air space for the fire. The Martin cellar trap is described as a hand hole trap, bell trap, stench trap, cesspool and back water trap, combined. It is said to be the original backwater trap with a floating seal. It was perfected after many years of labor and practical experience in cellar drainage and the manufacturer adds that after rigid tests and over ten years' use he is able to guarantee that it will give entire satisfaction.

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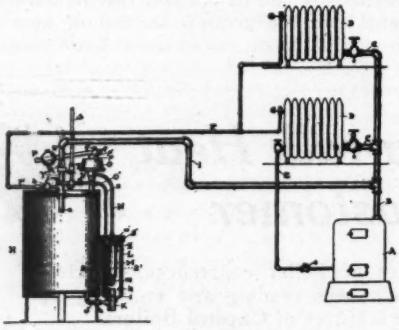

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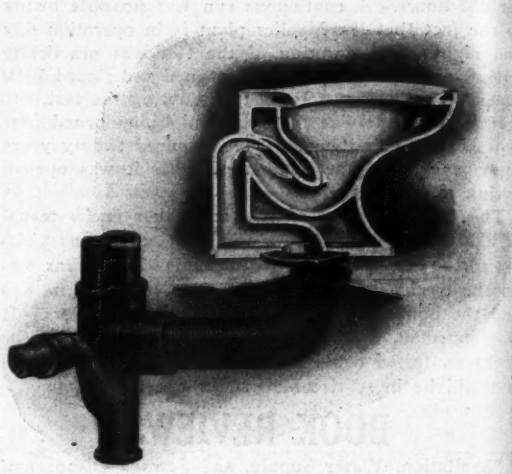

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